

PATENT APPLICATION
Attorney's Do. No. 7592-009

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE


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DATE OF DEPOSIT: JULY 17, 2003

I HEREBY CERTIFY THAT THIS PAPER AND ENCLOSURES AND/OR FEE ARE BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE "EXPRESS MAIL POST OFFICE TO ADDRESSEE" SERVICE UNDER 37 CFR 1.10 ON THE DATE INDICATED ABOVE AND IS ADDRESSED TO: MAIL STOP PATENT APPLICATION, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450

NATASHA FRENCH
(SENDER'S PRINTED NAME)


(SIGNATURE)

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EL982128884US

Enclosed for filing is a patent application under 37 CFR 1.53(b) of:

Inventor: Michael W. Wallace
For: VEHICLE OCCUPANT CLASSIFICATION SYSTEM AND METHOD

This application is a ☐ continuation, ☒ divisional, ☐ continuation-in-part of prior application Serial No. 09/853,848, filed May 10, 2001.

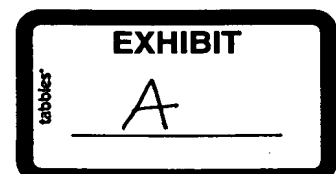
This application claims priority from U.S. Provisional Application Serial No. 60/203,001, filed May 10, 2000.

Prior application info: Examiner: Arthur, Gertrude Group Art Unit 3661

Applicant requests FIG. 2 to be published with the application.

Enclosures:

- ☒ Specification (pages 1-64); claims (page 65); abstract (page 66)
- ☒ Thirty sheet(s) of FORMAL drawings
- ☒ Declaration
- ☒ Copy from a prior application (37 CFR 1.63(d))
- ☒ Incorporation by Reference--The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.



- ☒ Applicant claims small entity status (see 37 CFR 1.27)
- ☒ Power of Attorney
- ☒ Information Disclosure Statement with Form PTO 1449
- ☒ Return Postcard

| CLAIMS AS FILED | | | | |
|--------------------|--------------|--------------|-----------|-----------------|
| For | Number Filed | Number Extra | Rate | Basic Fee \$375 |
| Total Claims | 1-20 | 0 | x \$ 9 = | 0 |
| Independent Claims | 1-3 | 0 | x \$ 42 = | 0 |
| TOTAL FILING FEE | | | | \$375 |

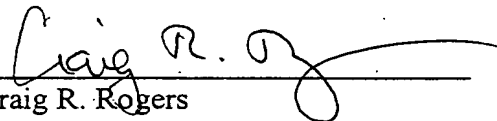


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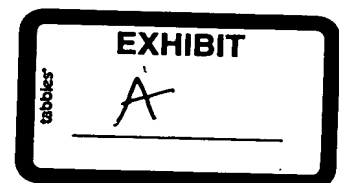
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Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.


 Craig R. Rogers
 Reg. No. 43,888

MARGER JOHNSON & McCOLLOM, P.C.
 1030 SW Morrison Street
 Portland, OR 97205
 503-222-3613





Attorney's Do. No. 7592-3

DECLARATION FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **VEHICLE OCCUPANT CLASSIFICATION SYSTEM AND METHOD**, the specification of which:

- ☐ is attached hereto.
- ☒ was filed on May 10, 2001 as
Application Serial No. 09/853,848
- ☐ and was amended on _____
(if applicable)
- ☐ with amendments through _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Sec. 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

| Prior Foreign Application(s) | | | Priority Claimed | |
|------------------------------|-----------|------------------------|--------------------------|--------------------------|
| _____ | _____ | _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| (Number) | (Country) | (Day/Month/Year Filed) | Yes | No |

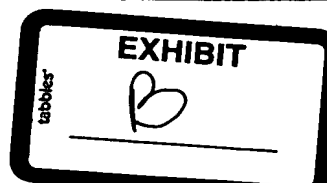
I hereby claim the benefit under Title 35, United States Code, Sec. 119(e) of any United States provisional application listed below:

Provisional Application No.

60/203:001

Filing Date

May 10, 2000



I hereby claim the benefit under Title 35, United States Code, Sec. 120 of any United States application(s), or Sec. 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, Sec. 112. I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(App. Serial No.)

(Filing Date)

(Status -patented, pending, etc.)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole or first inventor: Michael W. Wallace

Inventor's signature: _____

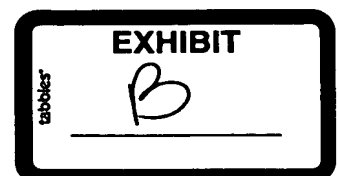


8/10/01
(Date)

Residence: Vancouver, Washington

Citizenship: United States

Post Office address: 2703 SE Briarwood Drive
Vancouver, Washington 98683





PATENT APPLICATION
Attorney's Do. No. 7592-3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Michael W. Wallace

Serial No.: 09/853,848

Group Art Unit: 3661

Filed: May 10, 2001

Examiner: Not Yet Known

For: VEHICLE OCCUPANT CLASSIFICATION SYSTEM AND METHOD

Box Missing Parts
Commissioner of Patents and Trademarks
Washington, D.C. 20231

POWER OF ATTORNEY

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application, to file a corresponding international application, to prosecute and transact all business in the Patent and Trademark Office connected therewith:



20575

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| Scott A. Schaffer | 38,610 |
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| Ariel Rogson | 43,054 |
| Craig R. Rogers | 43,888 |
| Kurt M. Rylander | 43,897 |
| Hillary Brooks | 45,815 |
| Clifford D. Weston | P-48,307 |

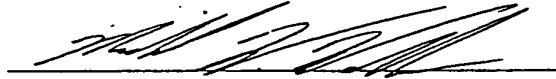


Direct all telephone calls to Craig R. Rogers at (503) 222-3613 and send all correspondence to:

MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, Oregon 97205

Full name of inventor: Michael W. Wallace

Inventor's signature:

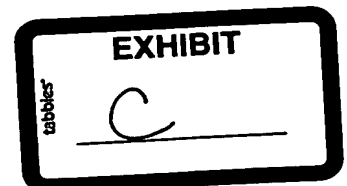


8/10/01
(Date)

Residence: Vancouver, Washington

Citizenship: United States

Post Office address: 2703 SE Briarwood Drive
Vancouver, Washington 98683





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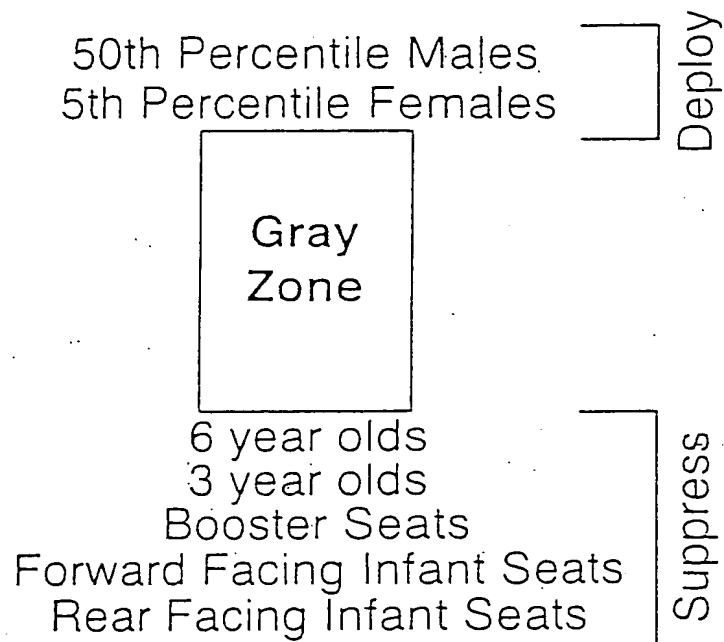


FIG. 1 (PRIOR ART)

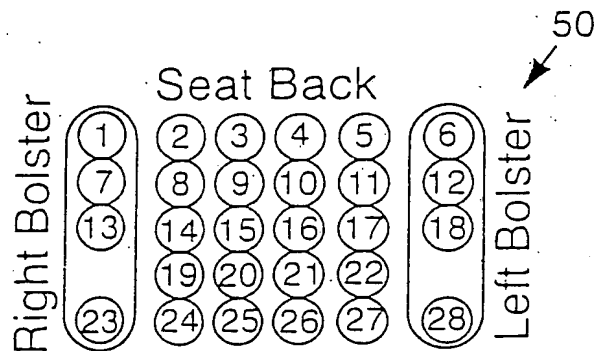
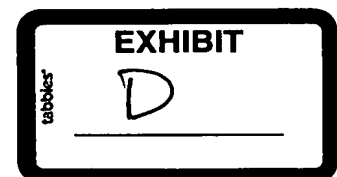


FIG. 3



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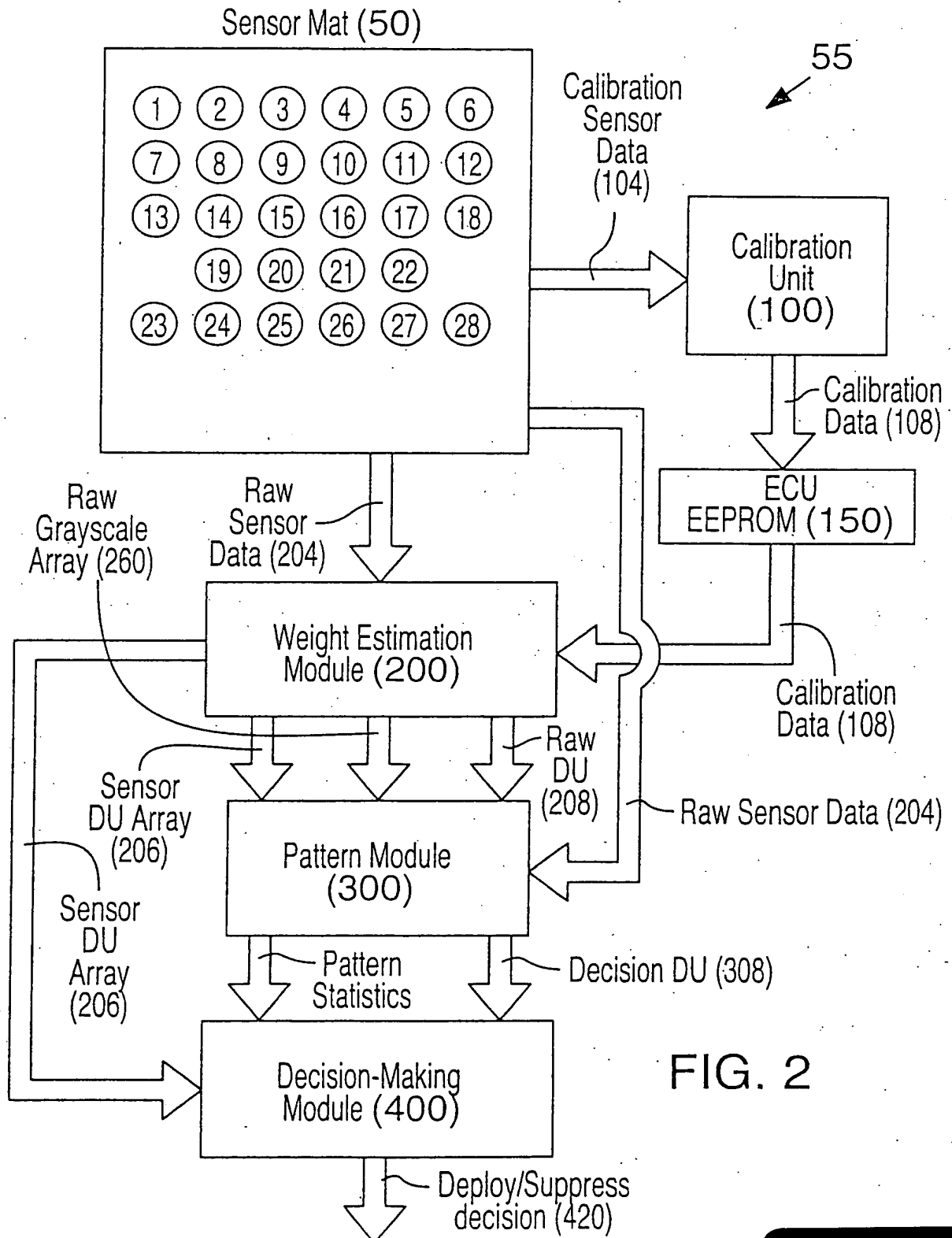


FIG. 2

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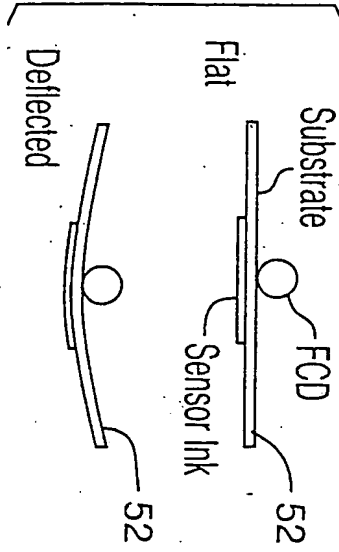


FIG. 4

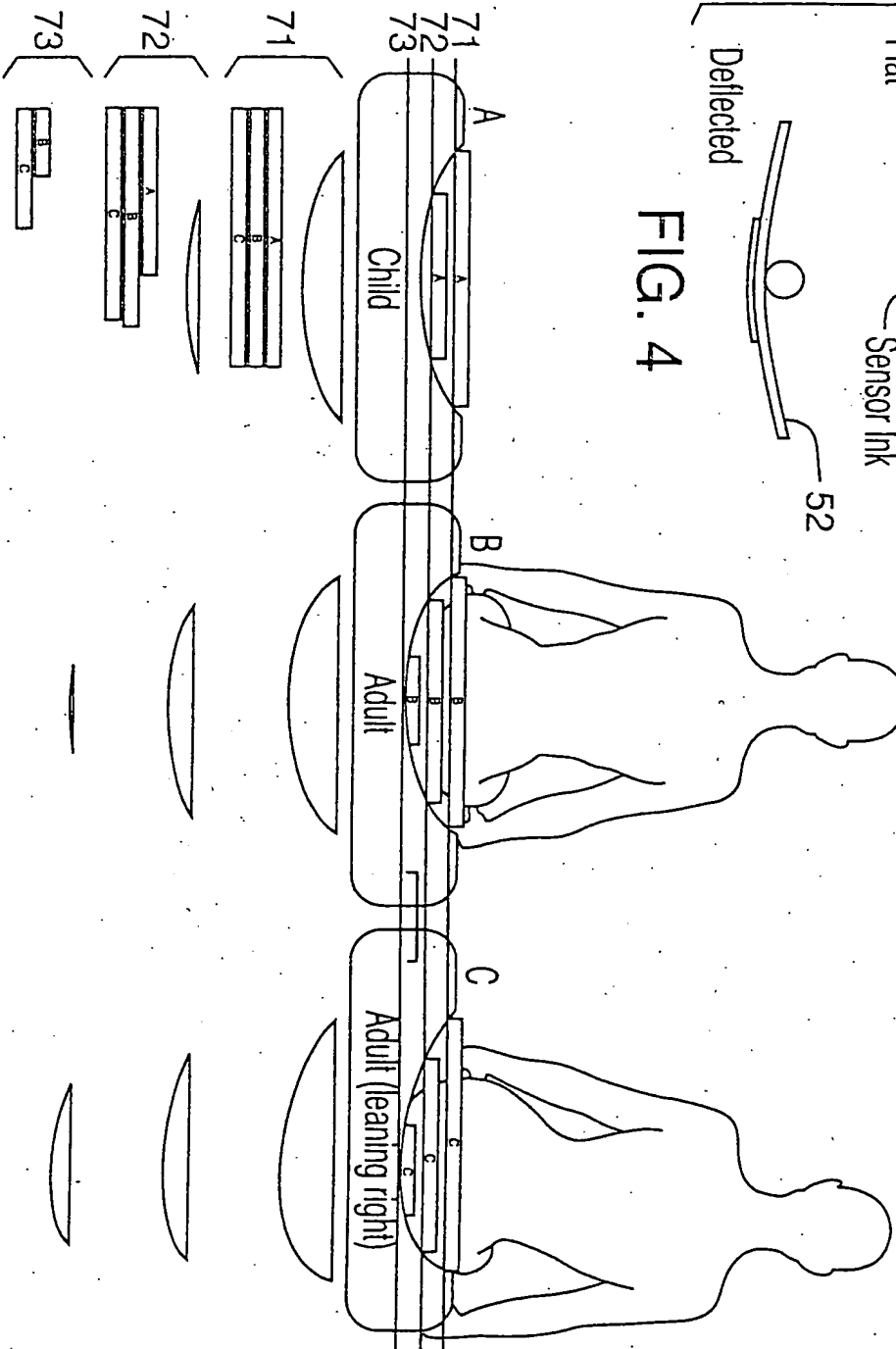


FIG. 5

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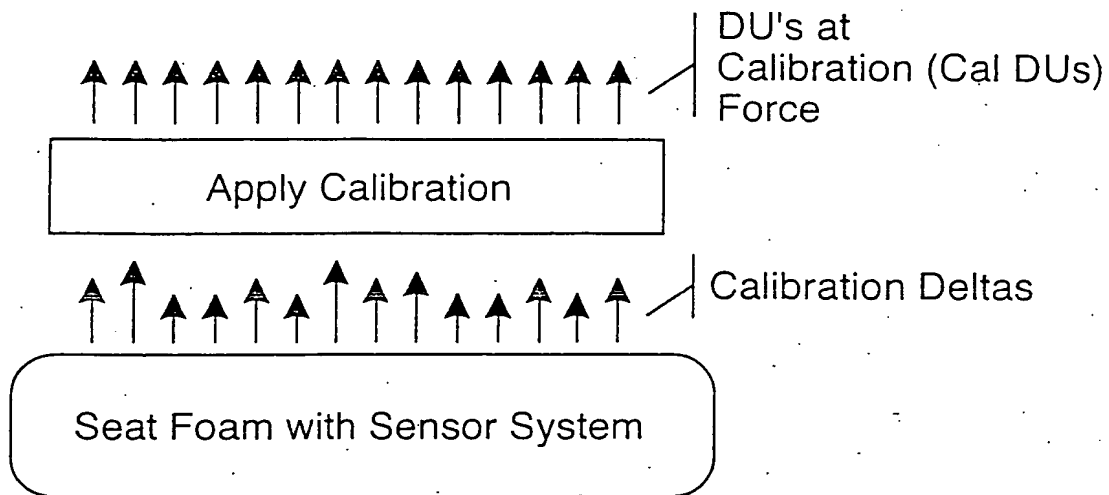


FIG. 6

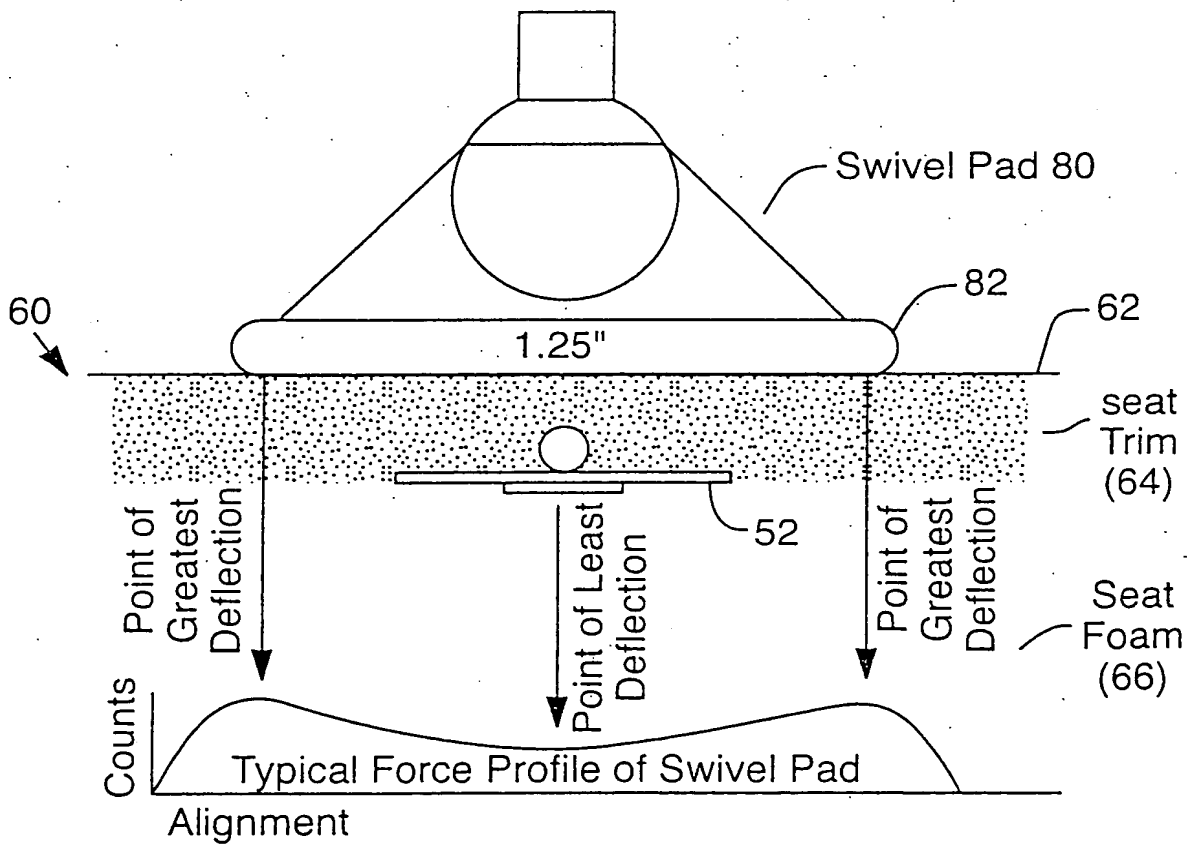
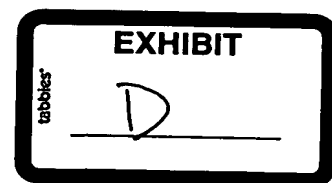


FIG. 7





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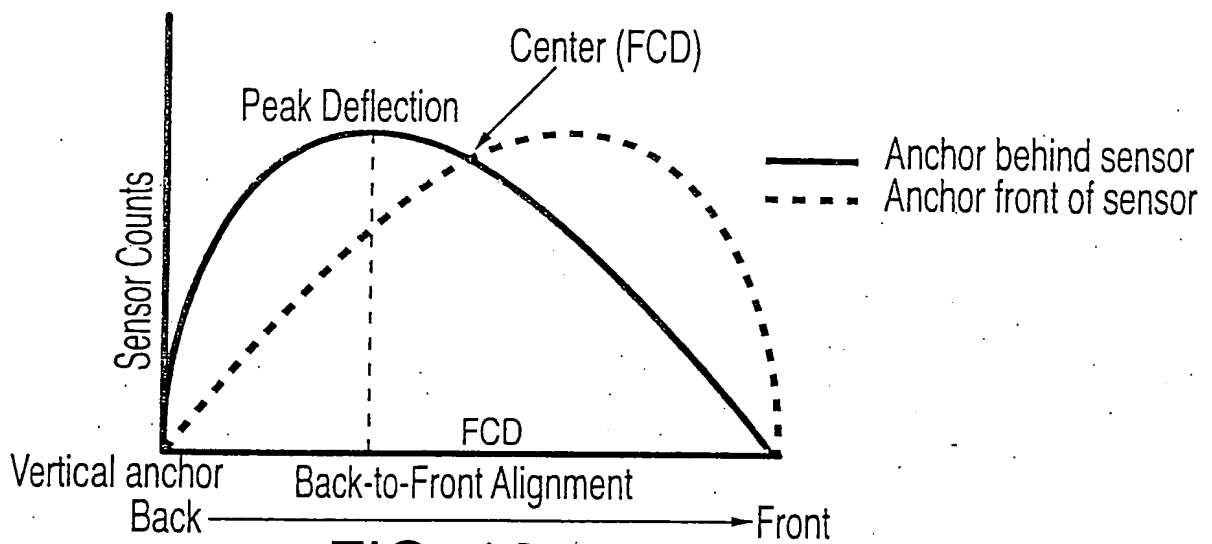


FIG. 10

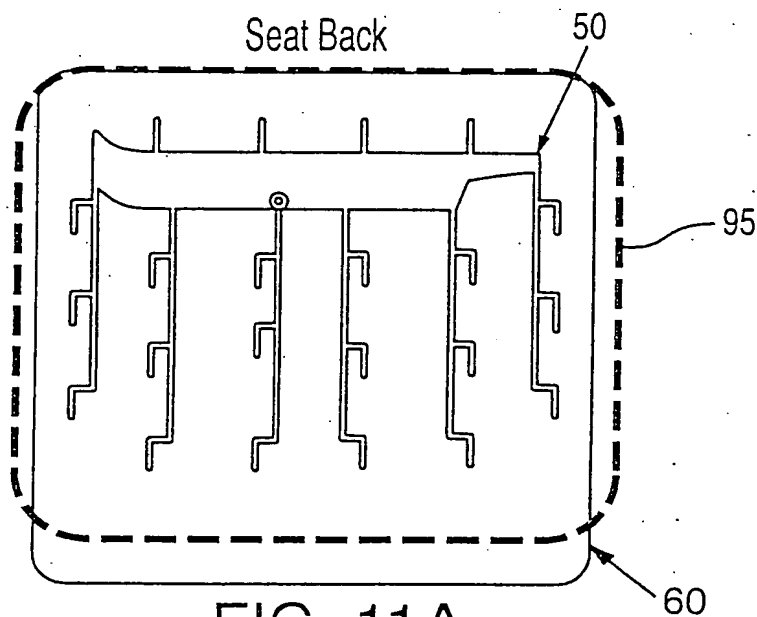


FIG. 11A

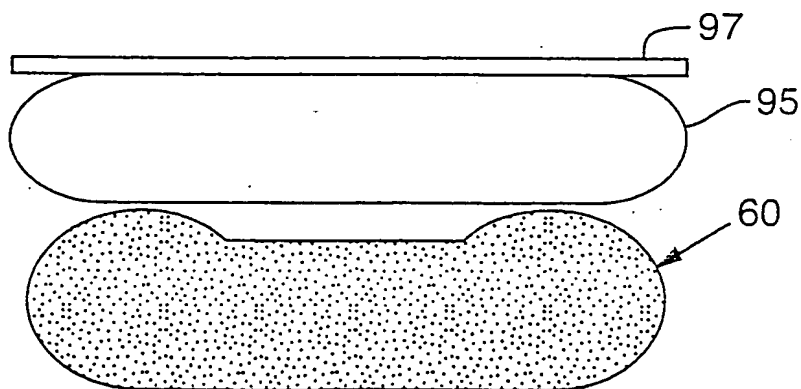
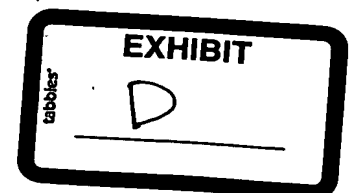


FIG. 11B



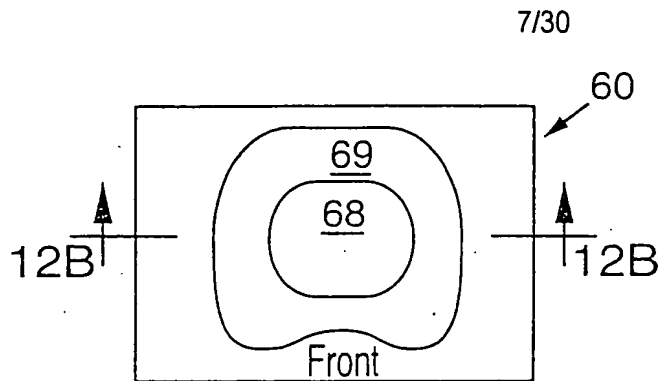


FIG. 12A

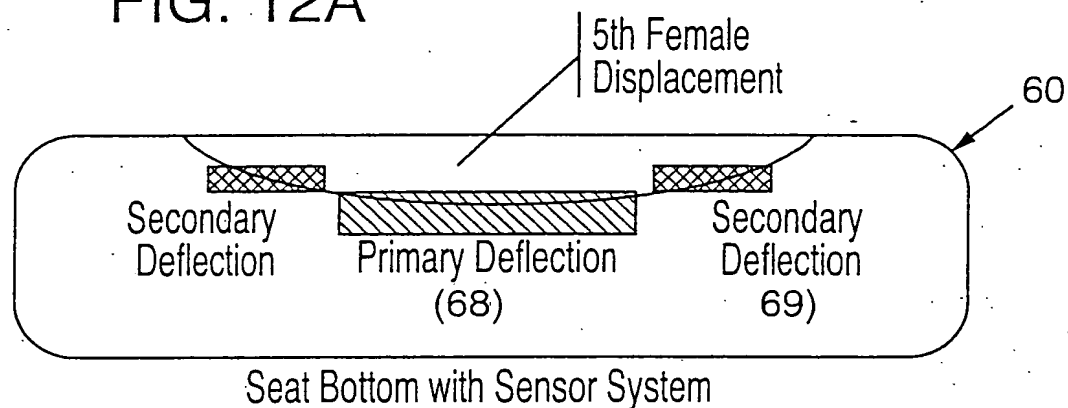


FIG. 12B

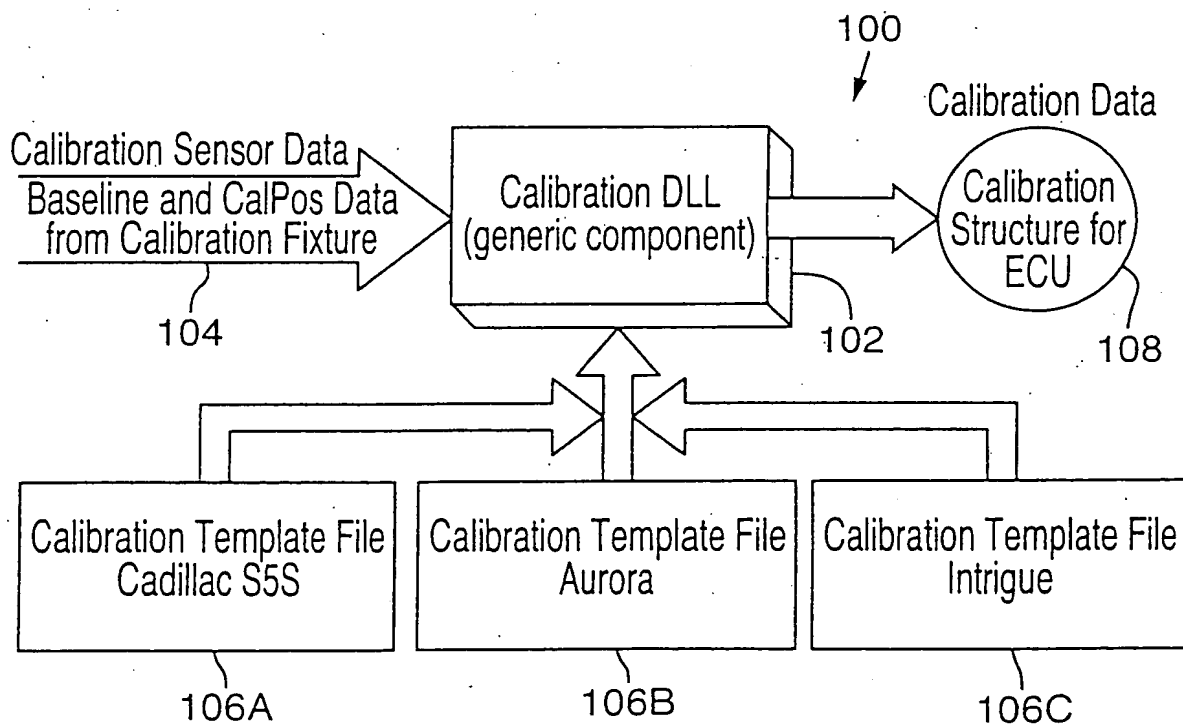


FIG. 13



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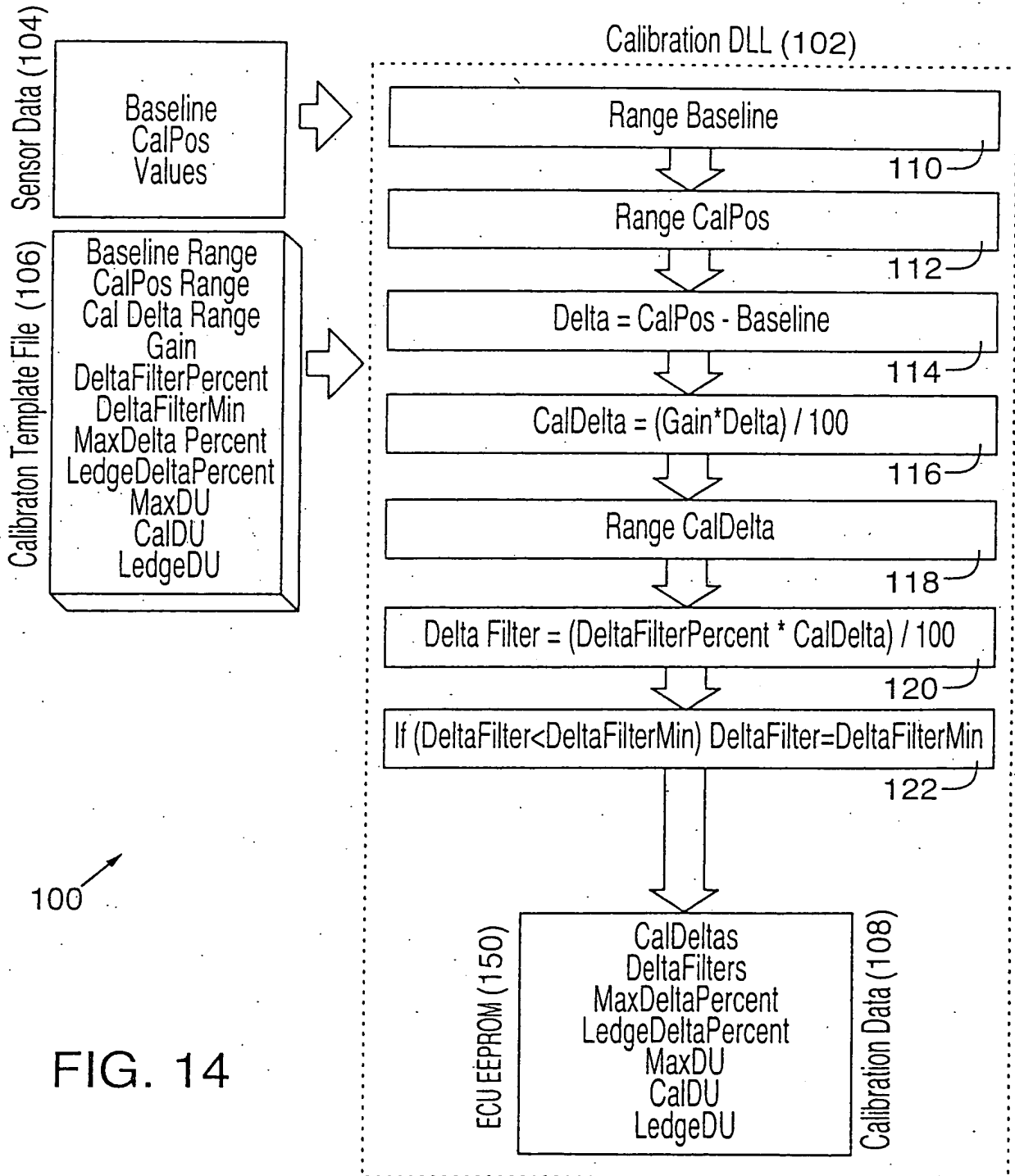


FIG. 14

EXHIBIT

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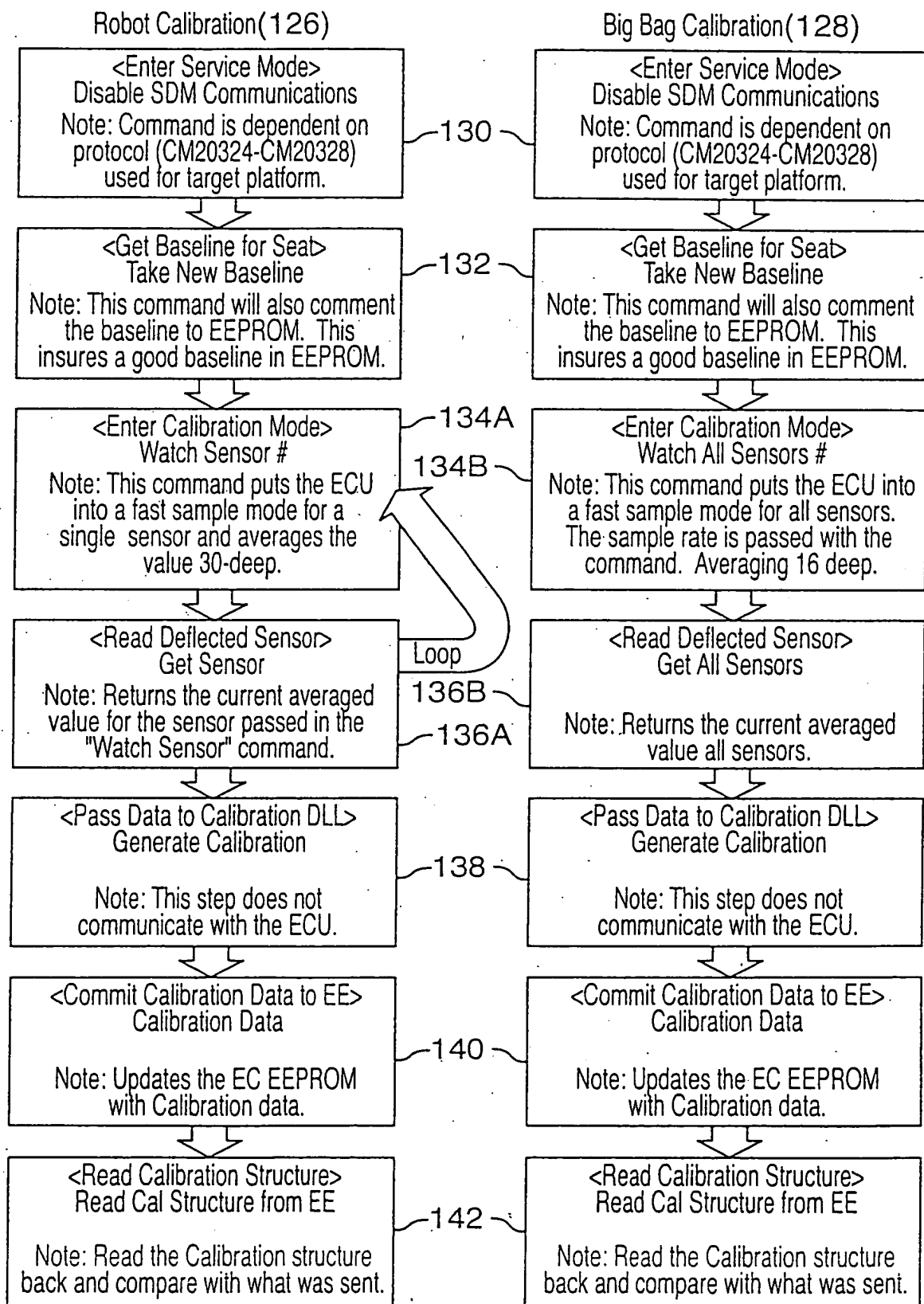


FIG. 15

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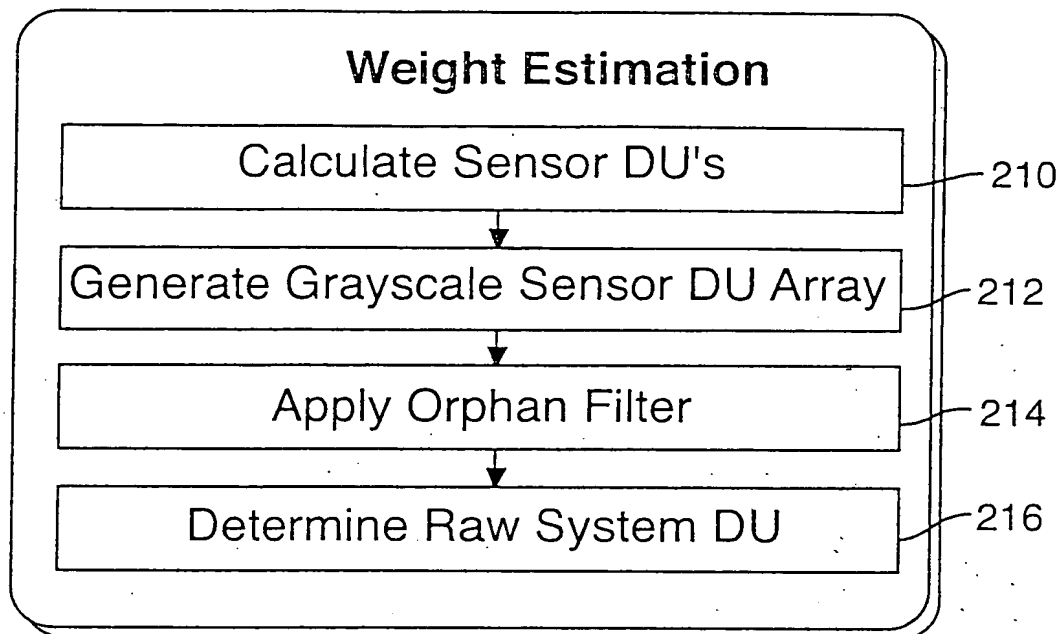


FIG. 16

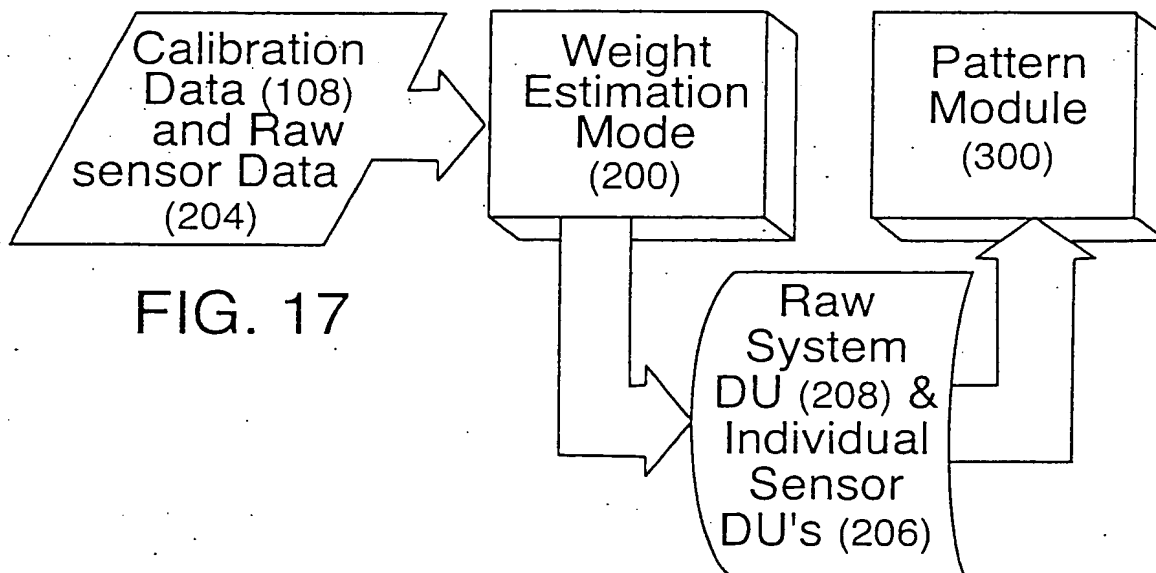
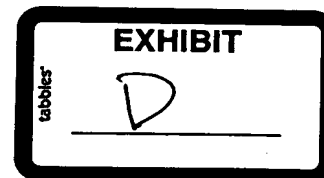


FIG. 17



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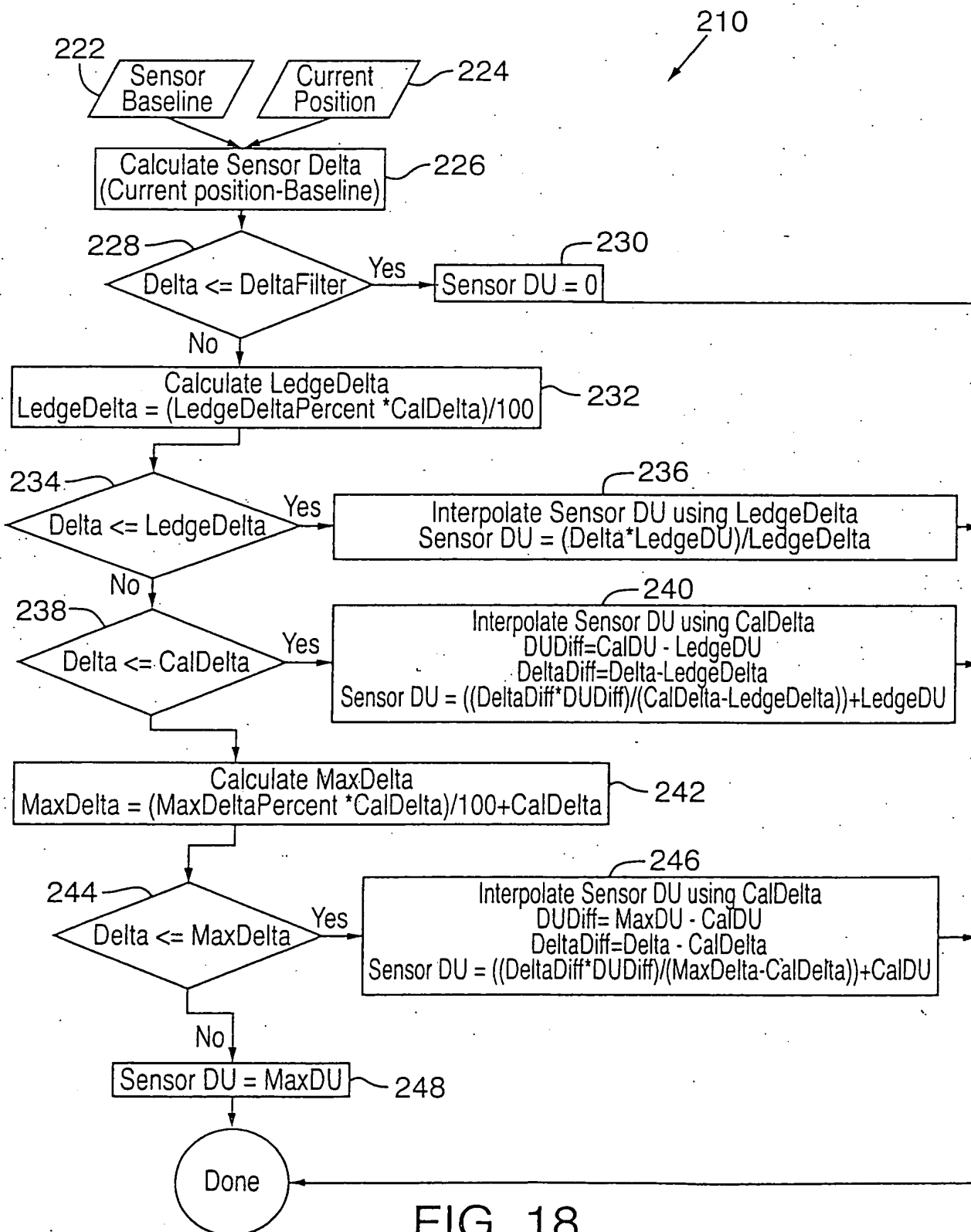
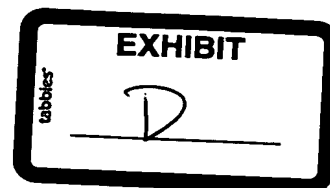
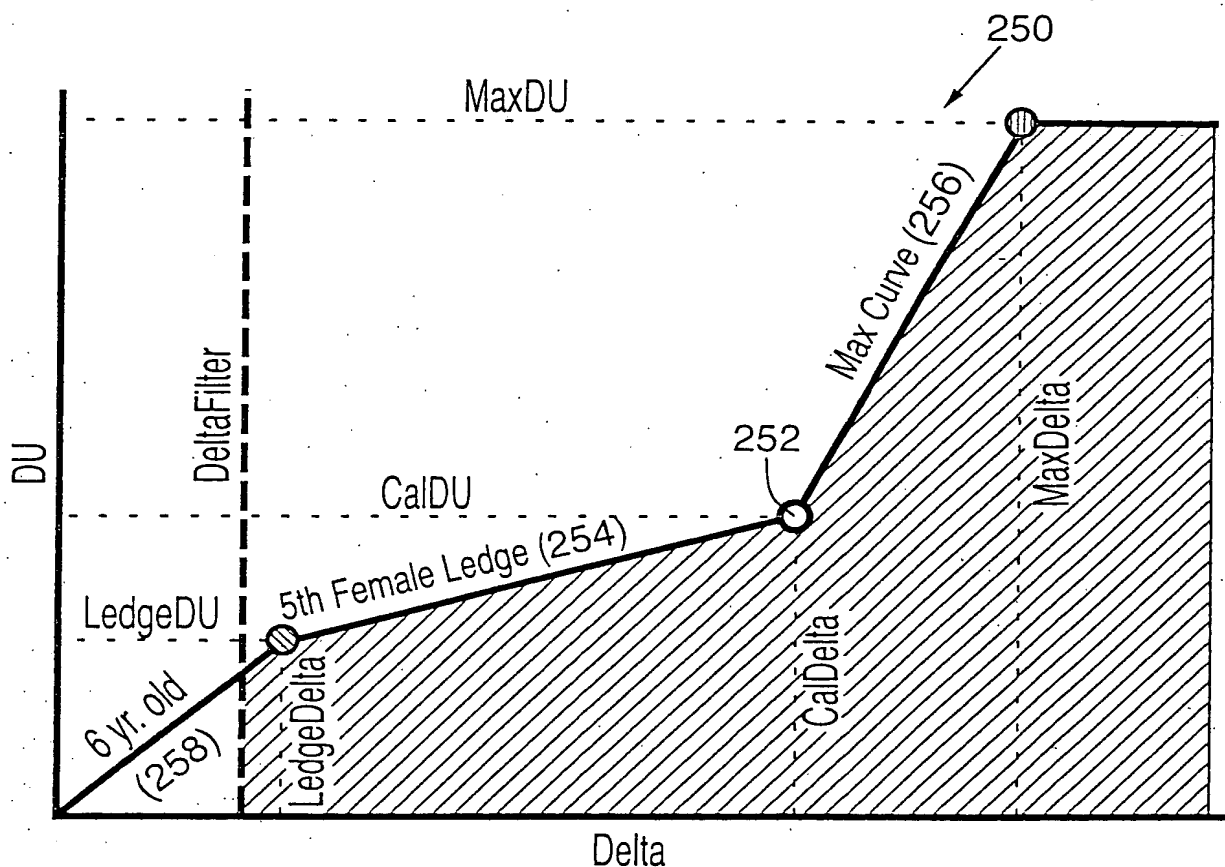


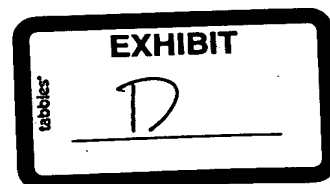
FIG. 18

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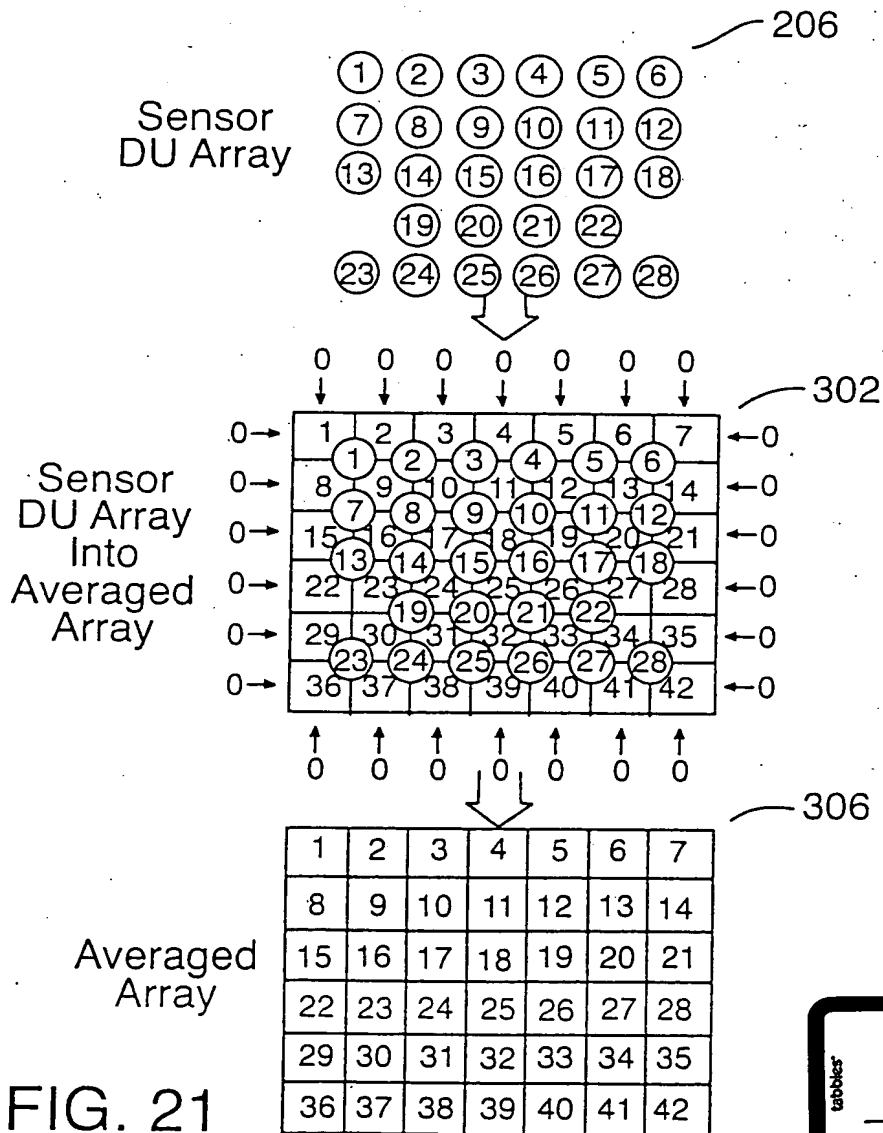
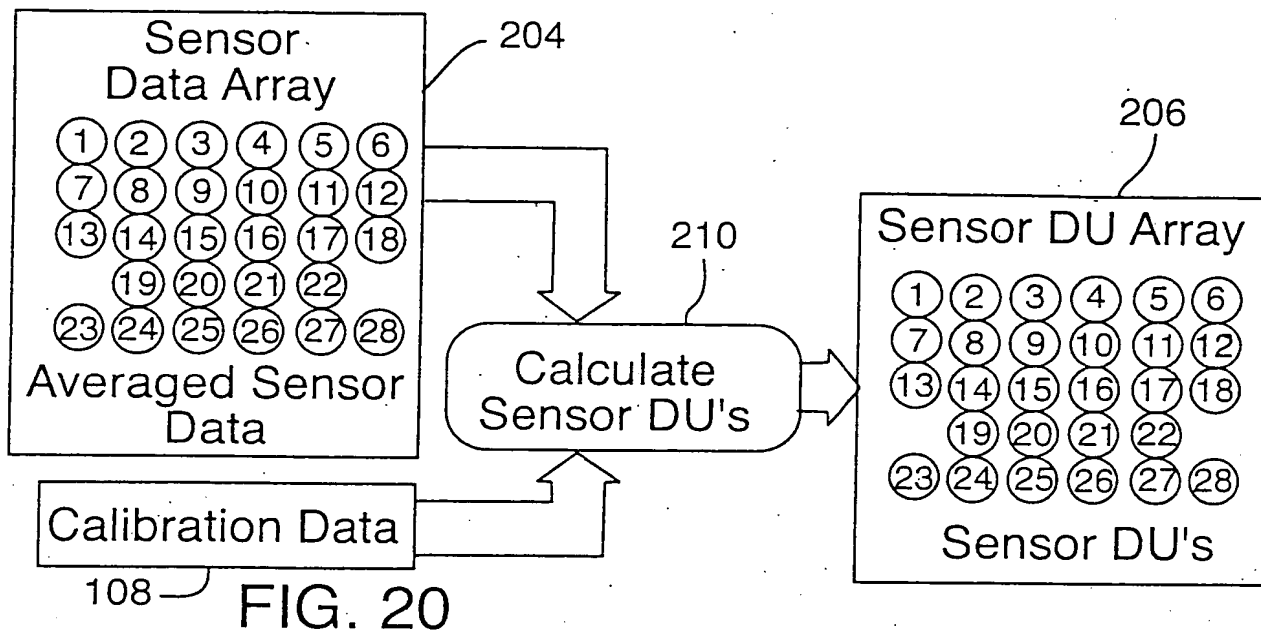


- Interpolated DU values
- ⊗ $\text{LedgeDelta} = (\text{LedgeDeltaPercent} * \text{CalDelta}) / 100$
- $\text{CalDelta} = \text{Calibrated Value}$
- ⊗ $\text{MaxDelta} = \text{CalDelta} + ((\text{MaxDeltaPercent} * \text{CalDelta}) / 100)$
- - - $\text{DeltaFilter} = \text{Calibrated Value}$
- ▨ Sensor DU contribution to System.

FIG. 19



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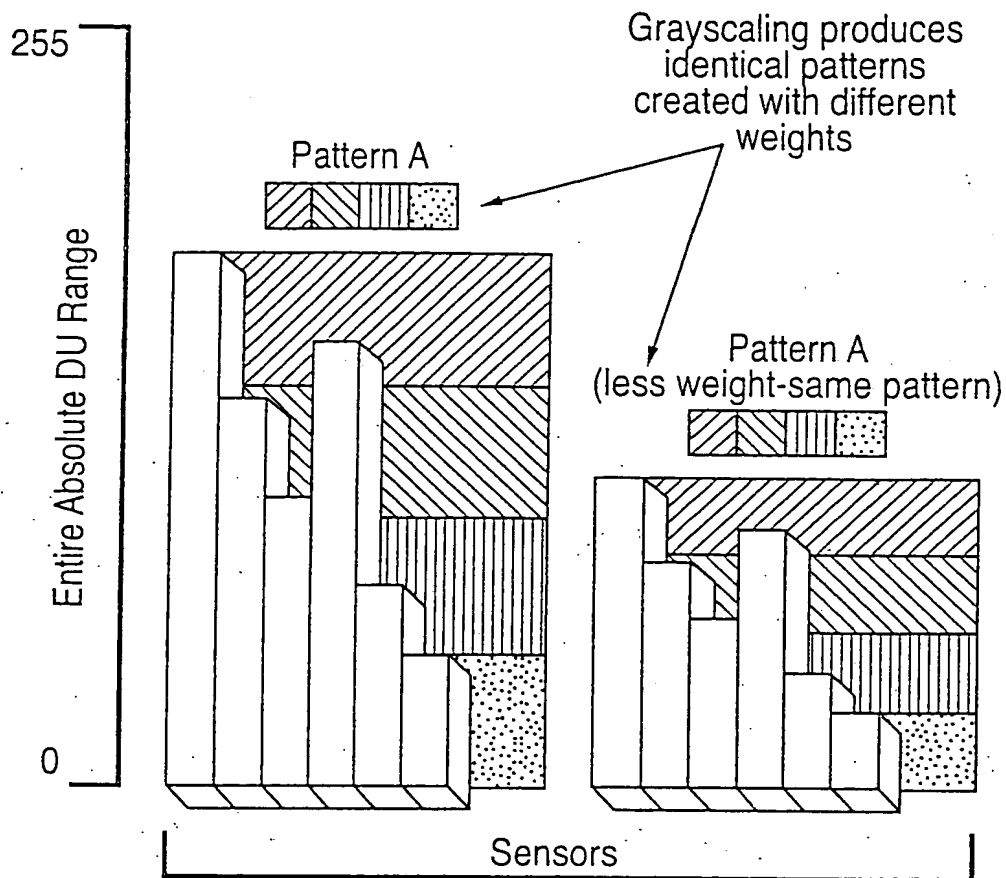


FIG. 22

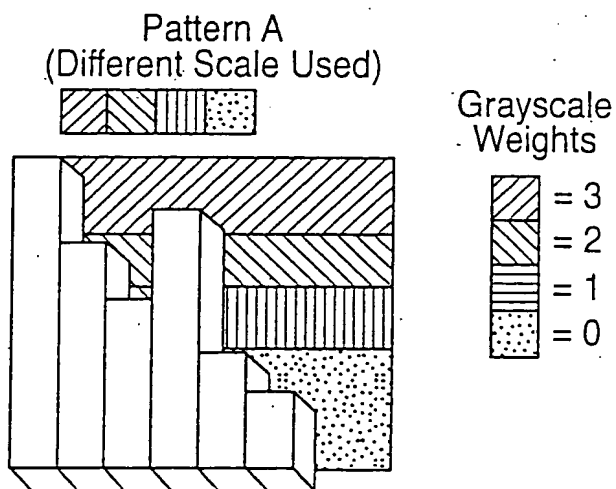
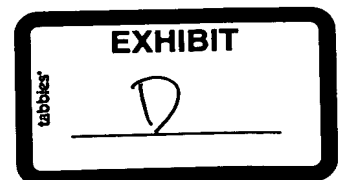
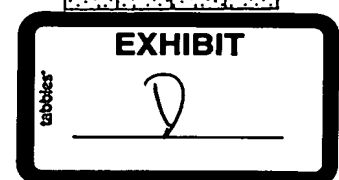
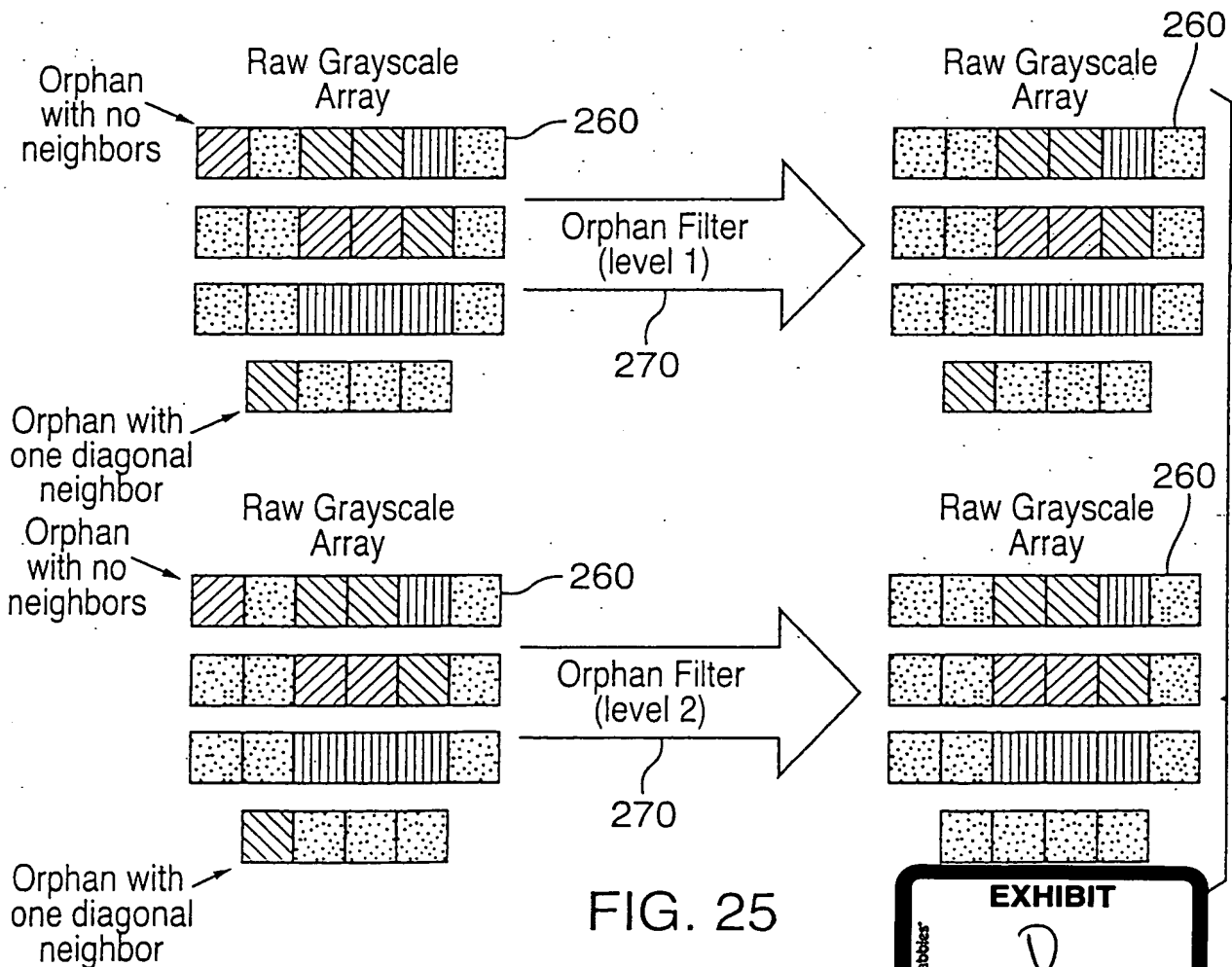
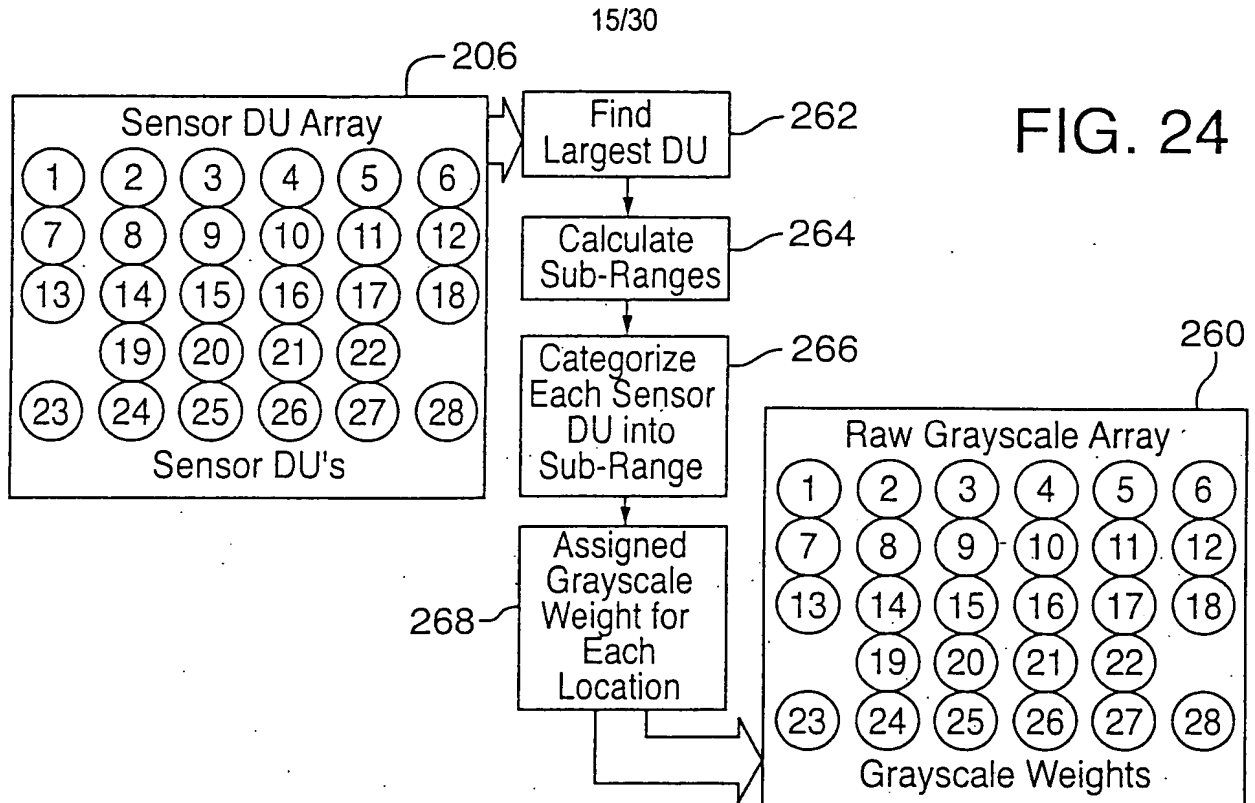


FIG. 23





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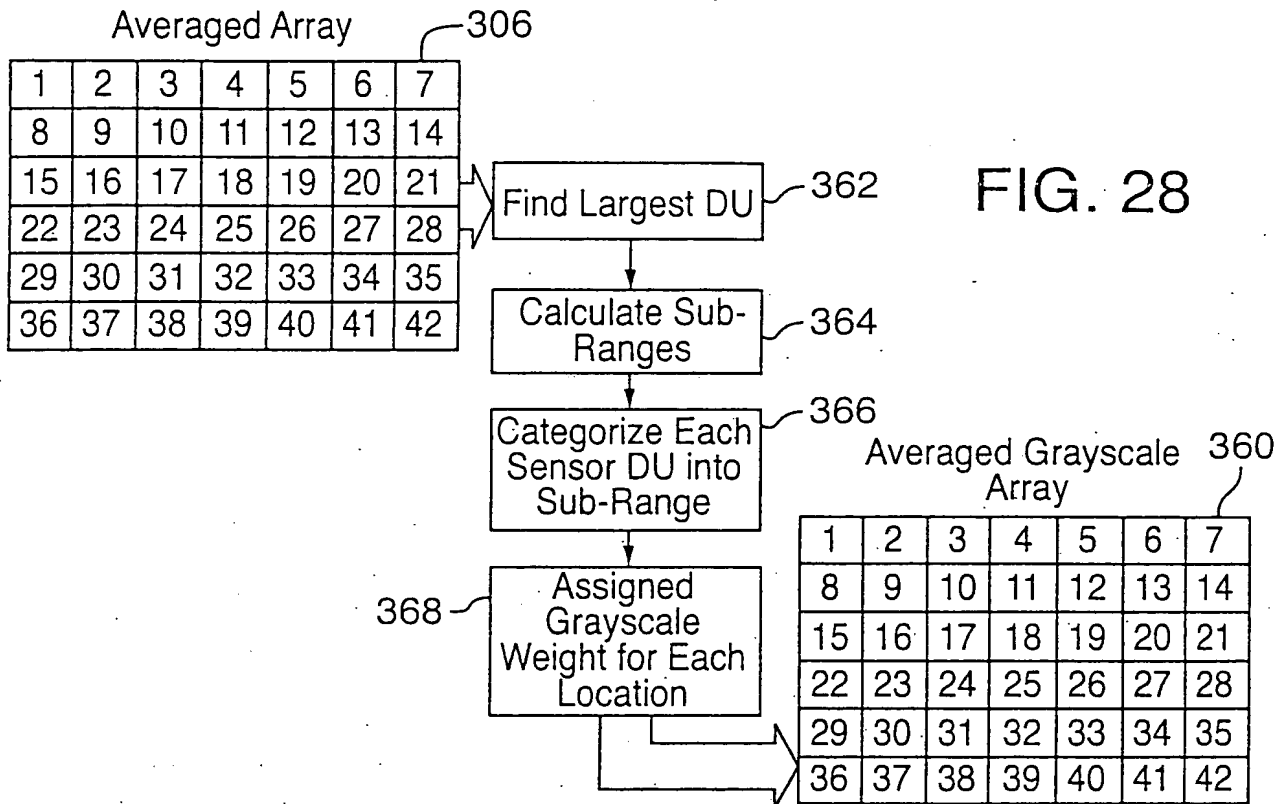


FIG. 28

FIG. 26

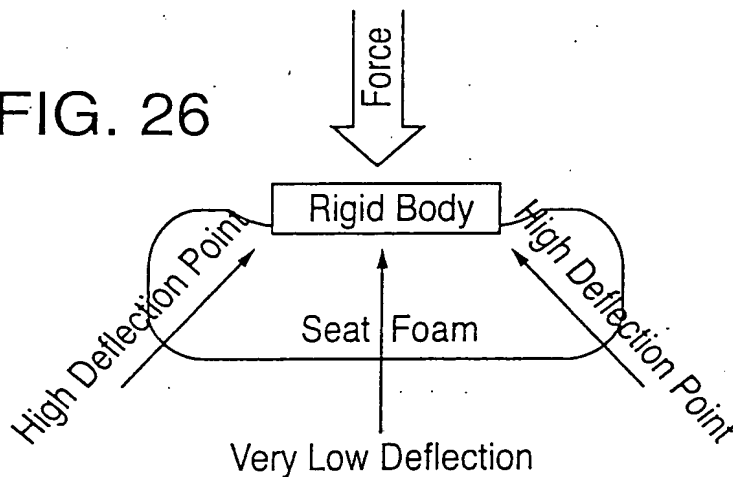
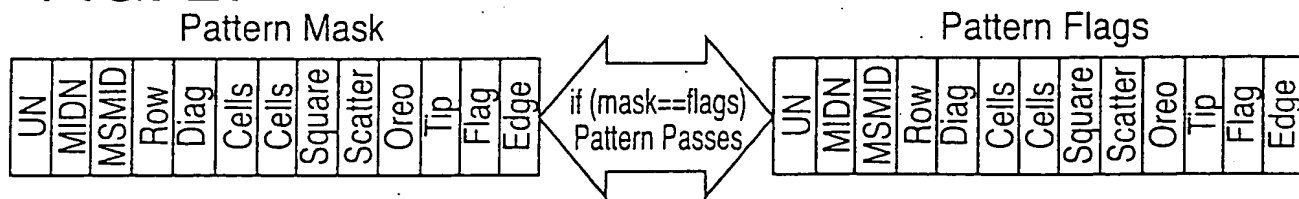


FIG. 27



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FIG. 29A

360 Averaged Grayscale Array U-Region 372

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

FIG. 29B

360 Averaged Grayscale Array N-Region 374

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

FIG. 29C

360 Averaged Grayscale Array MID-Region 376

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

FIG. 29D

360 Averaged Grayscale Array MS-Region 378

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

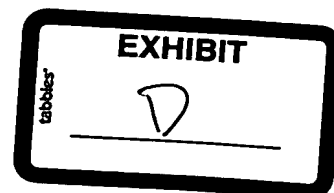
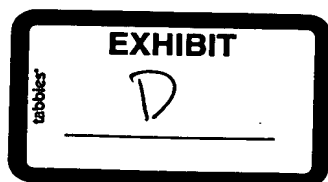
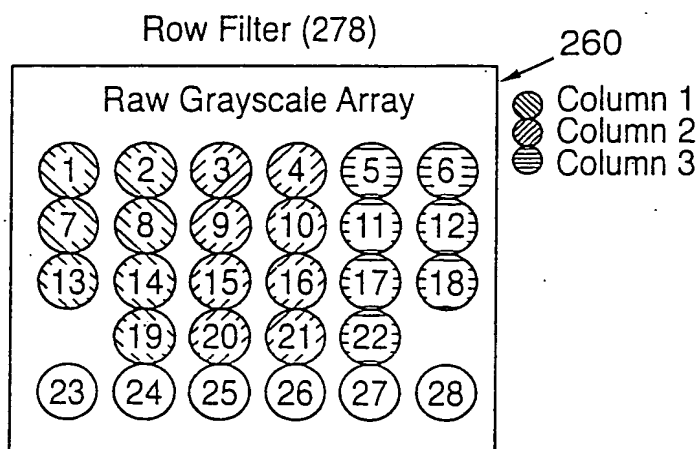


FIG. 30A

FIG. 30B

FIG. 30C

FIG. 30D



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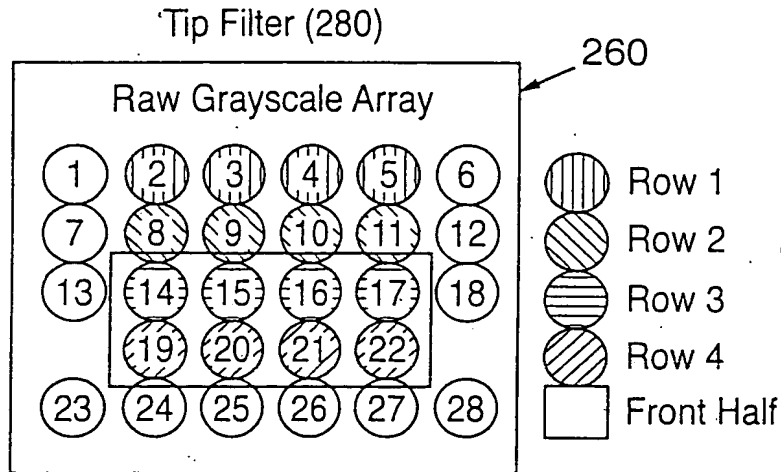


FIG. 30E

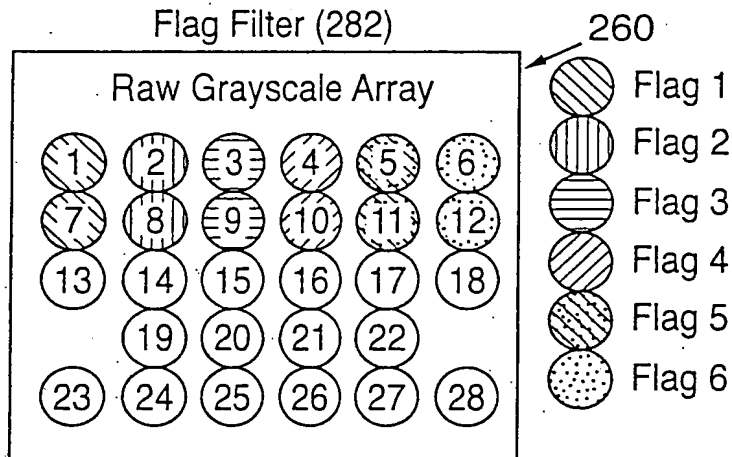


FIG. 30F

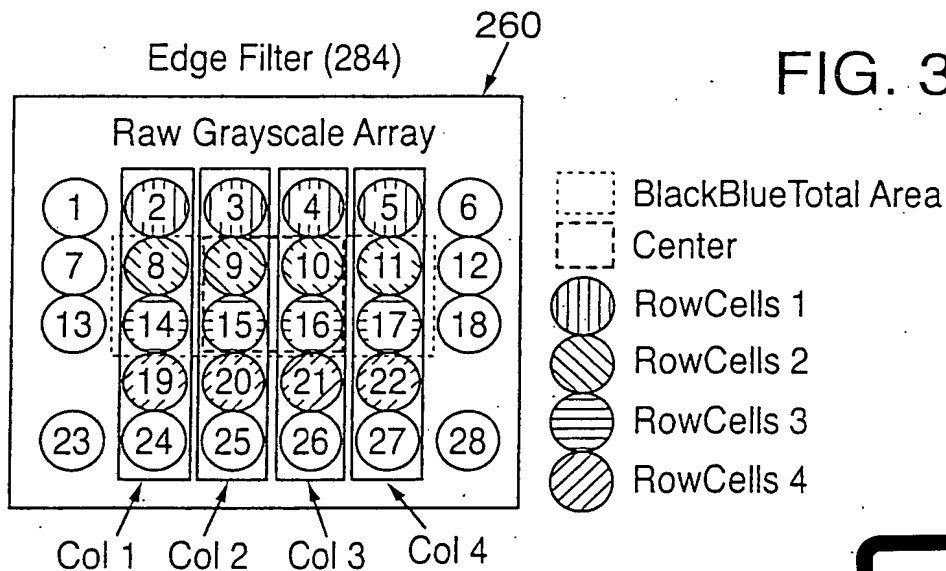
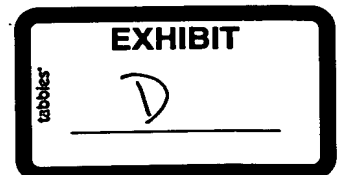
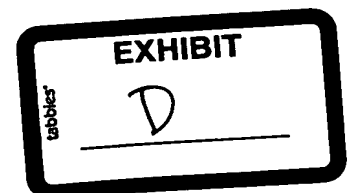
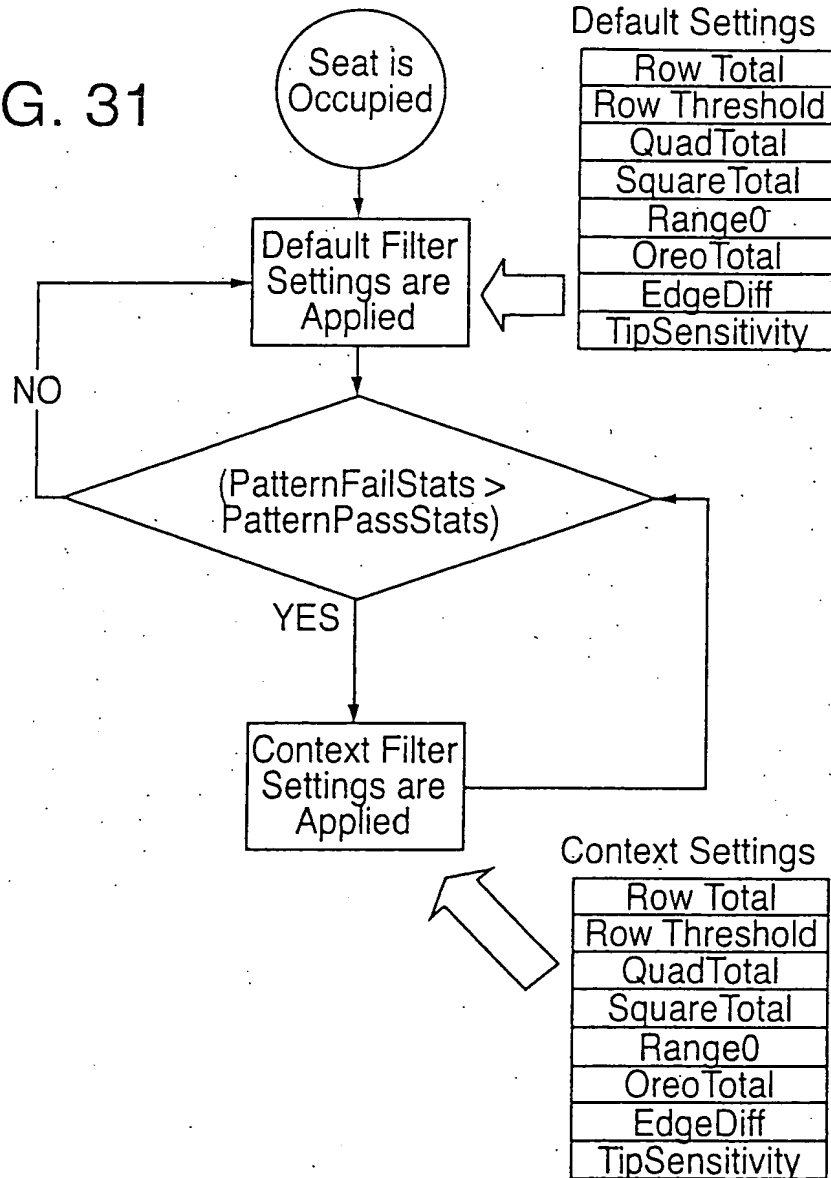


FIG. 30G



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FIG. 31



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FIG. 32A

Averaged Grayscale Array
 Thin Occupant
 (ThinWidth = 3)

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

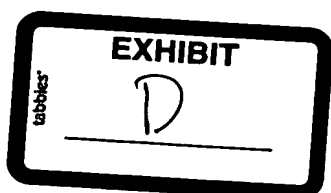
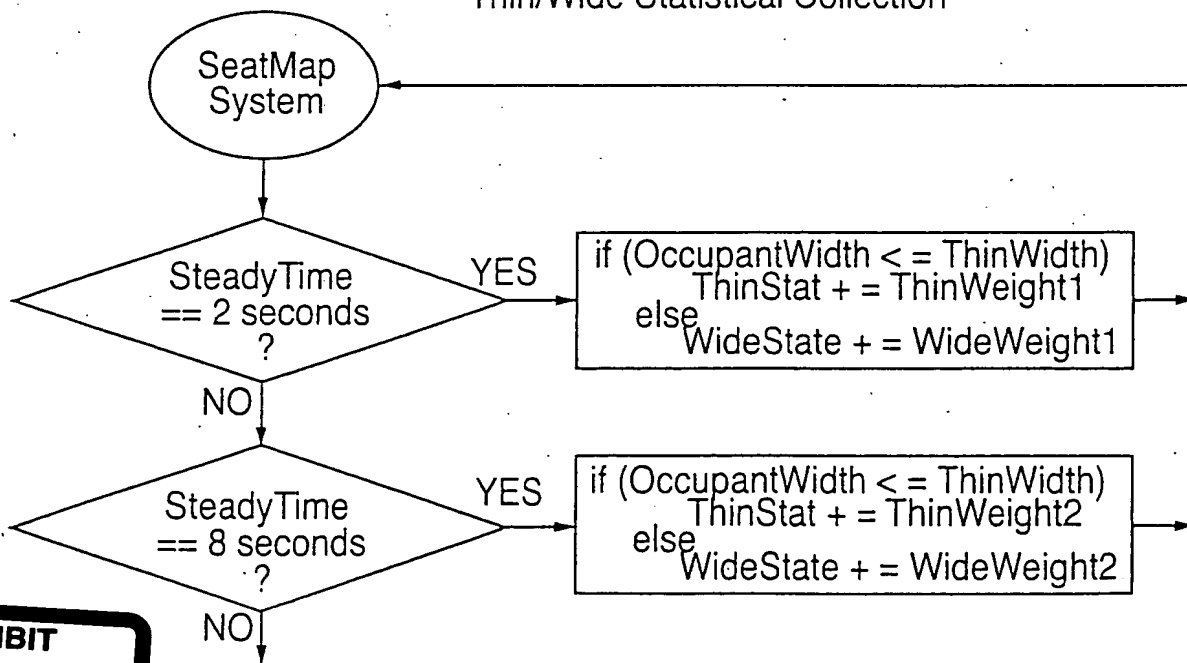
FIG. 32B

Averaged Grayscale Array
 Wide Occupant
 (ThinWidth = 3)

| | | | | | | |
|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| 36 | 37 | 38 | 39 | 40 | 41 | 42 |

FIG. 32C

Thin/Wide Statistical Collection



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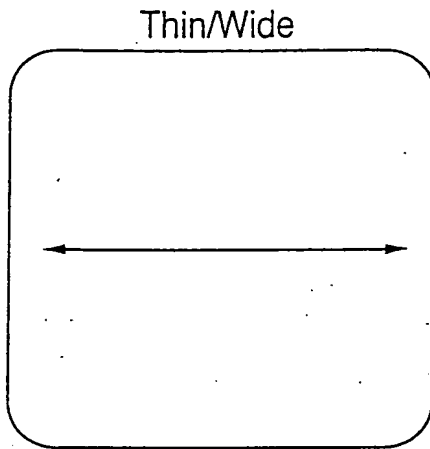


FIG. 33A

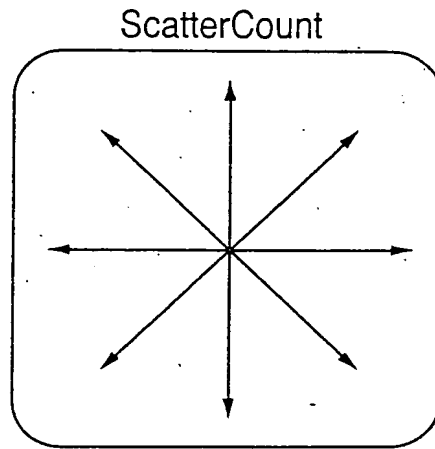


FIG. 33B

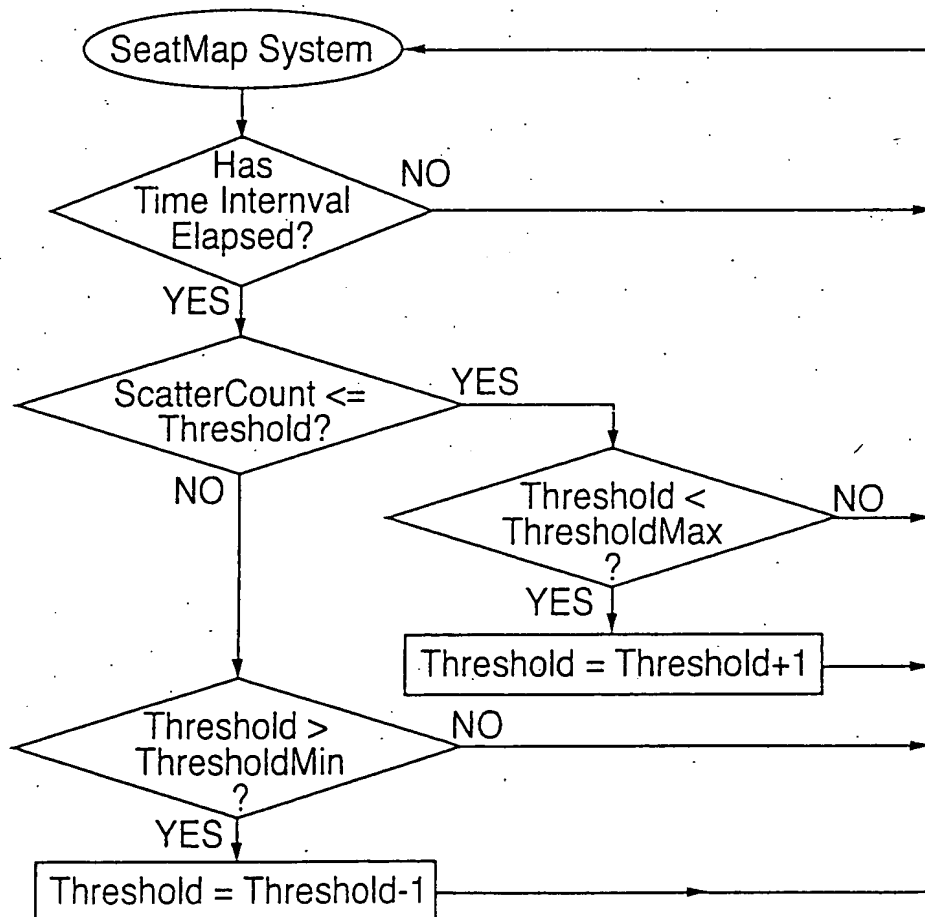
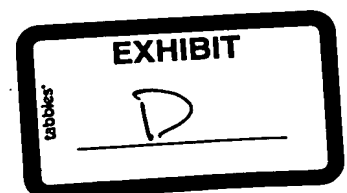


FIG. 34



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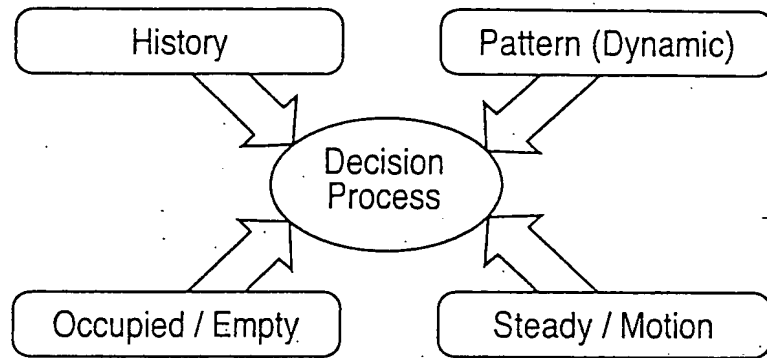


FIG. 35

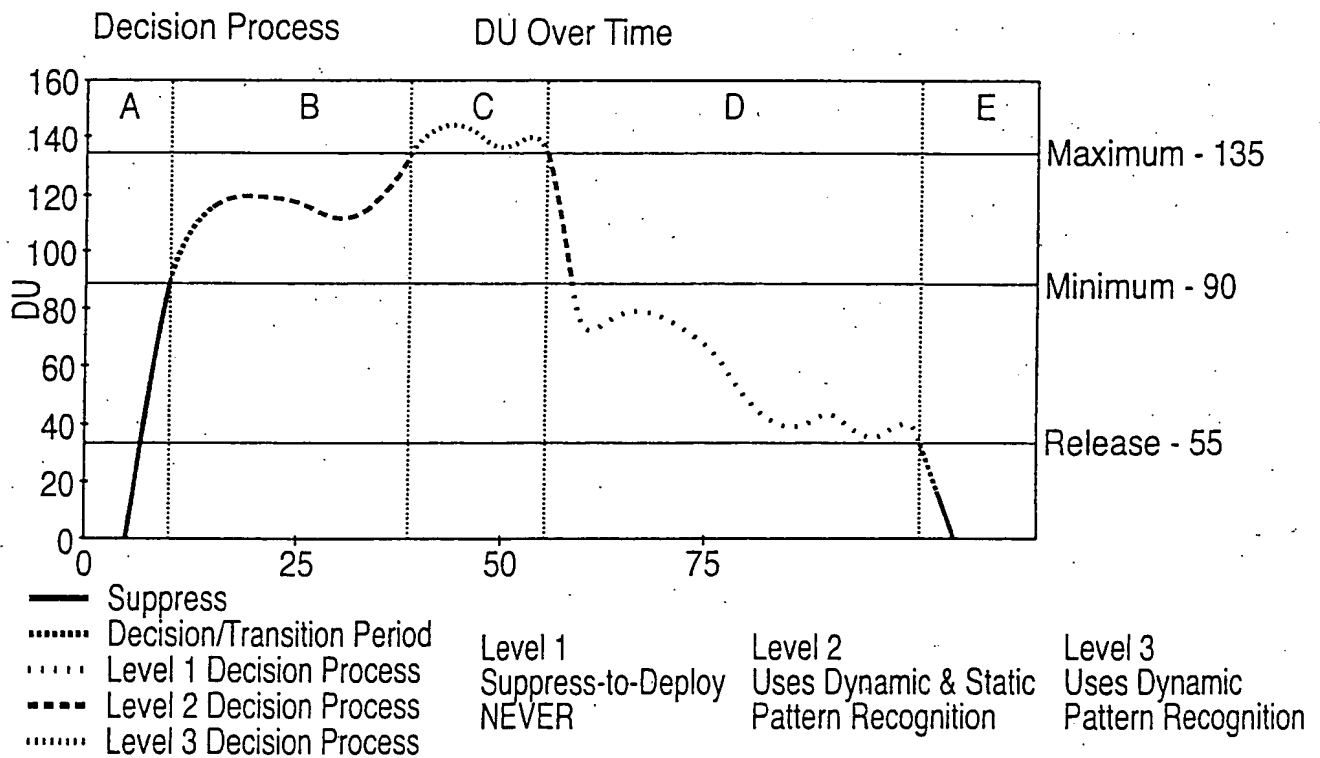
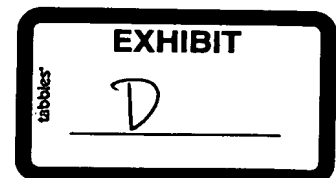
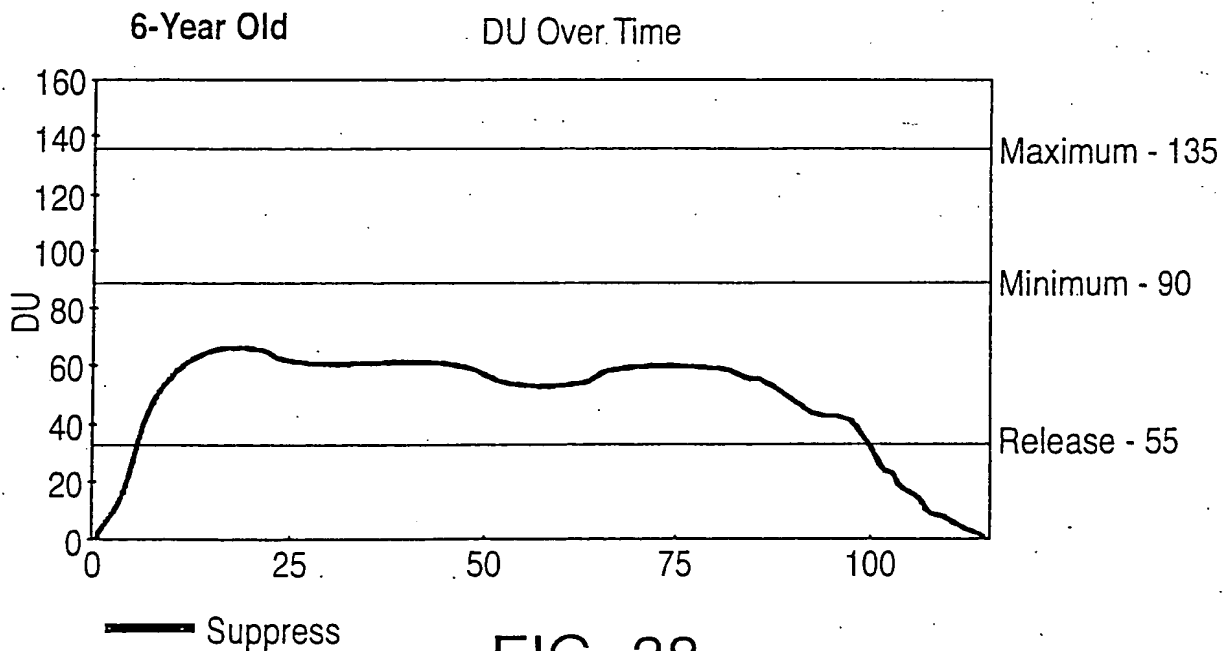
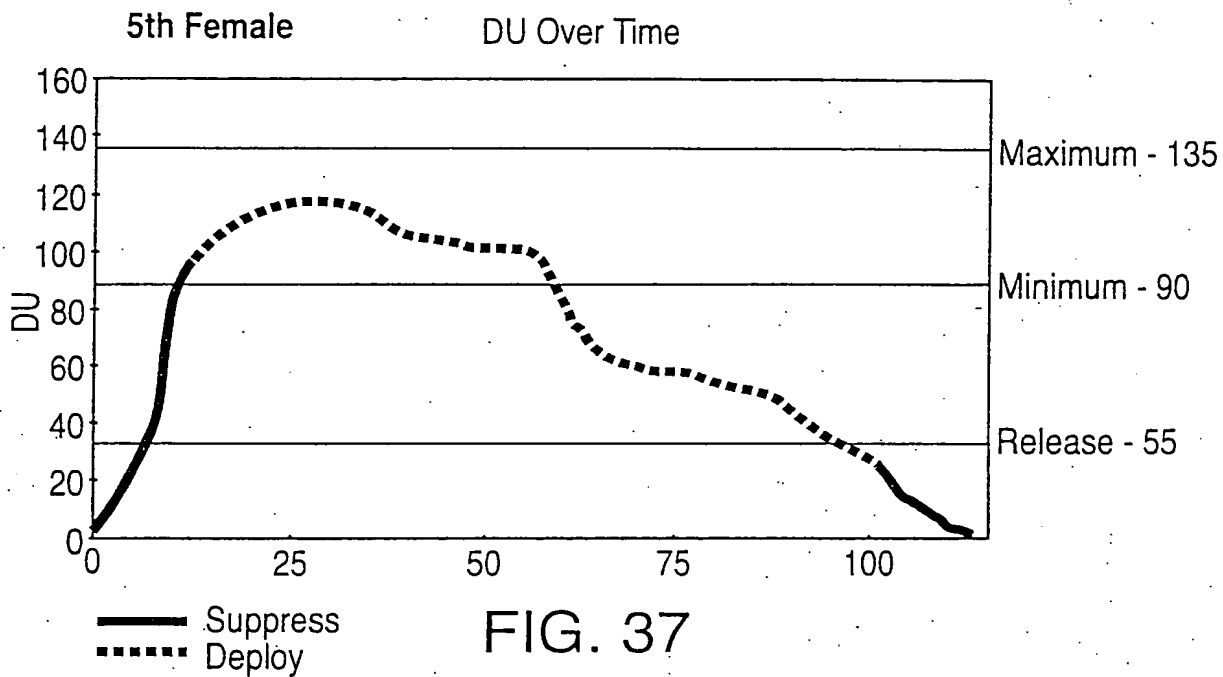


FIG. 36



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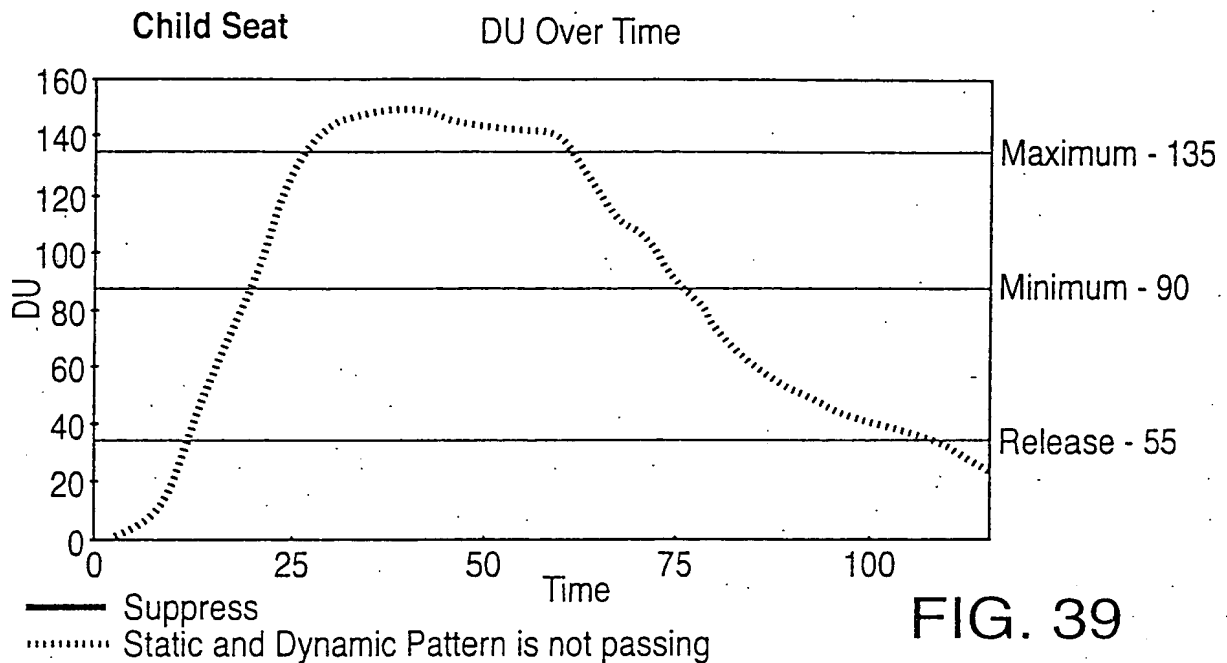


FIG. 39

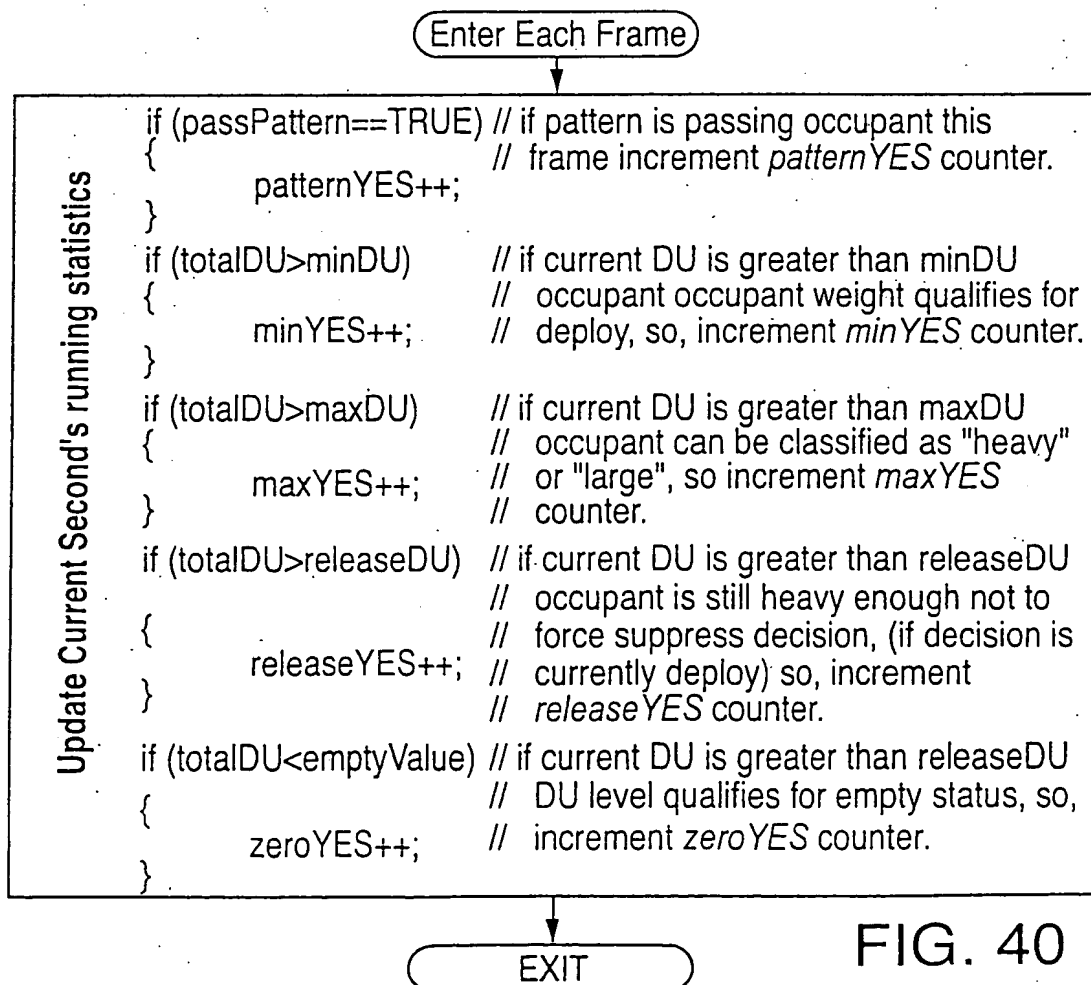
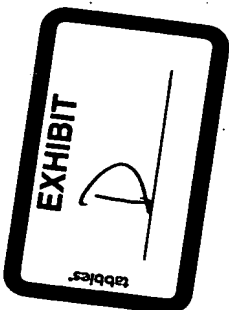


FIG. 40



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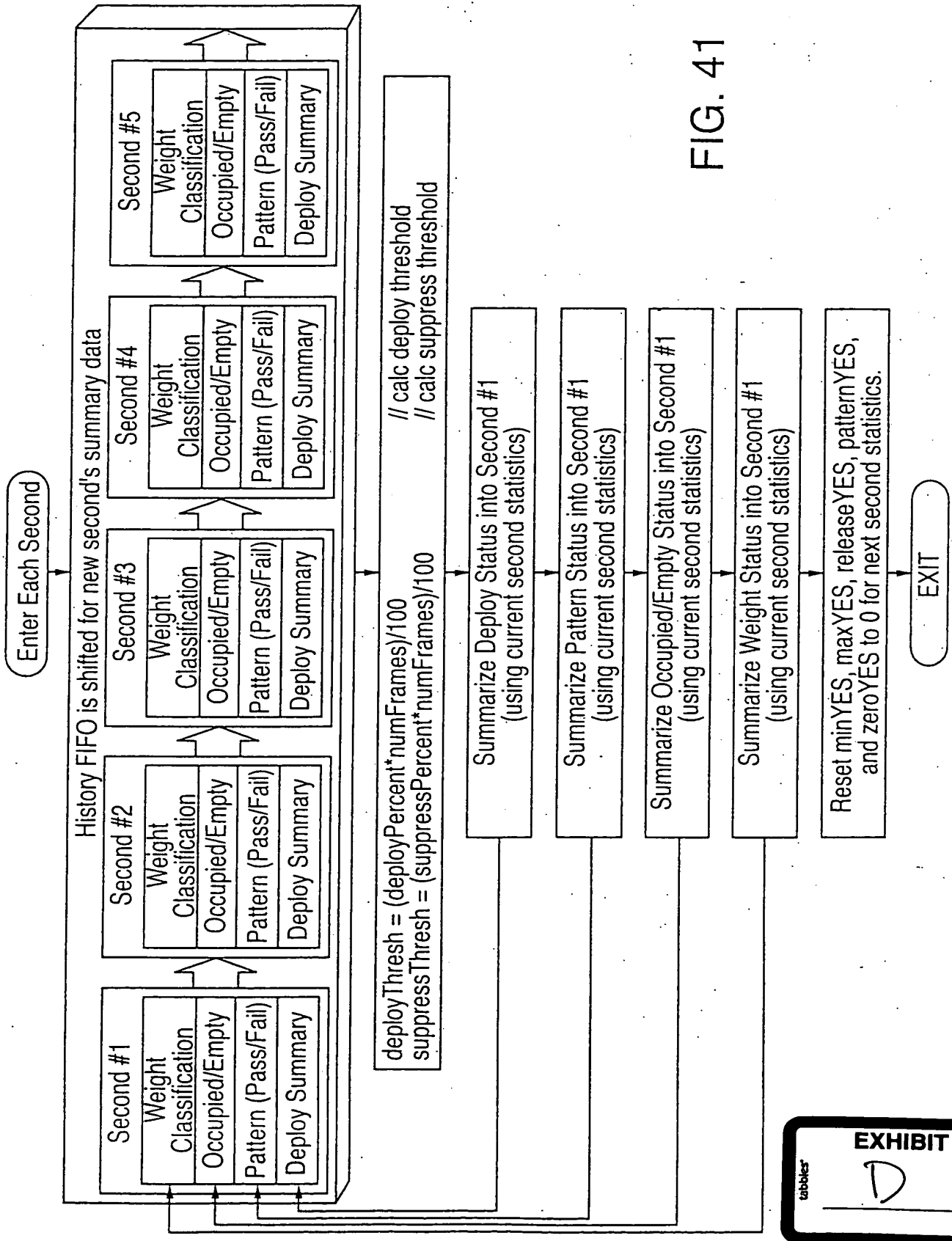
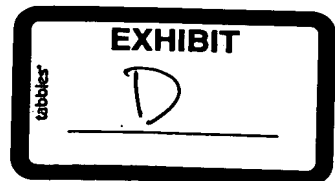
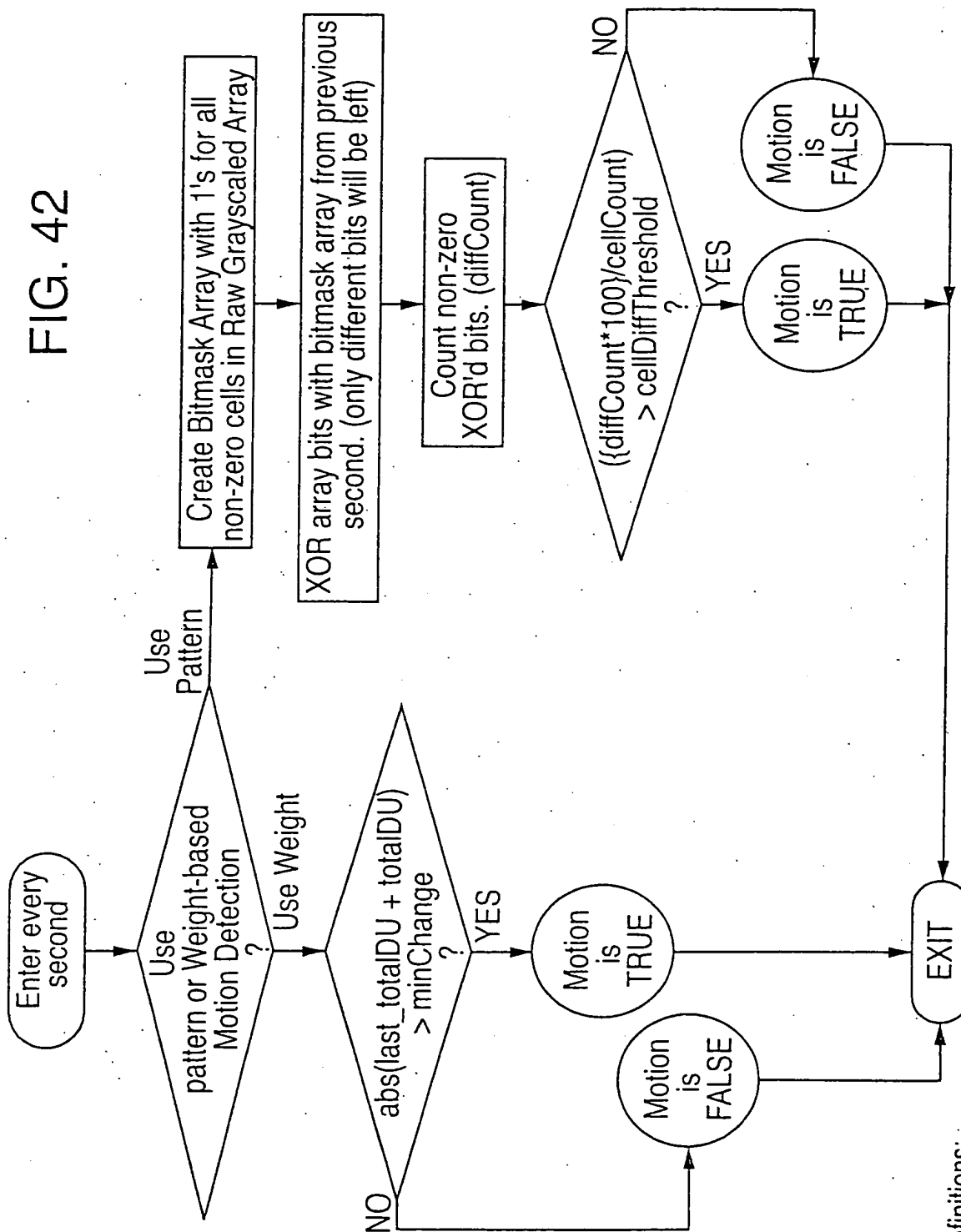


FIG. 41

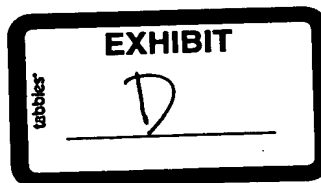


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FIG. 42

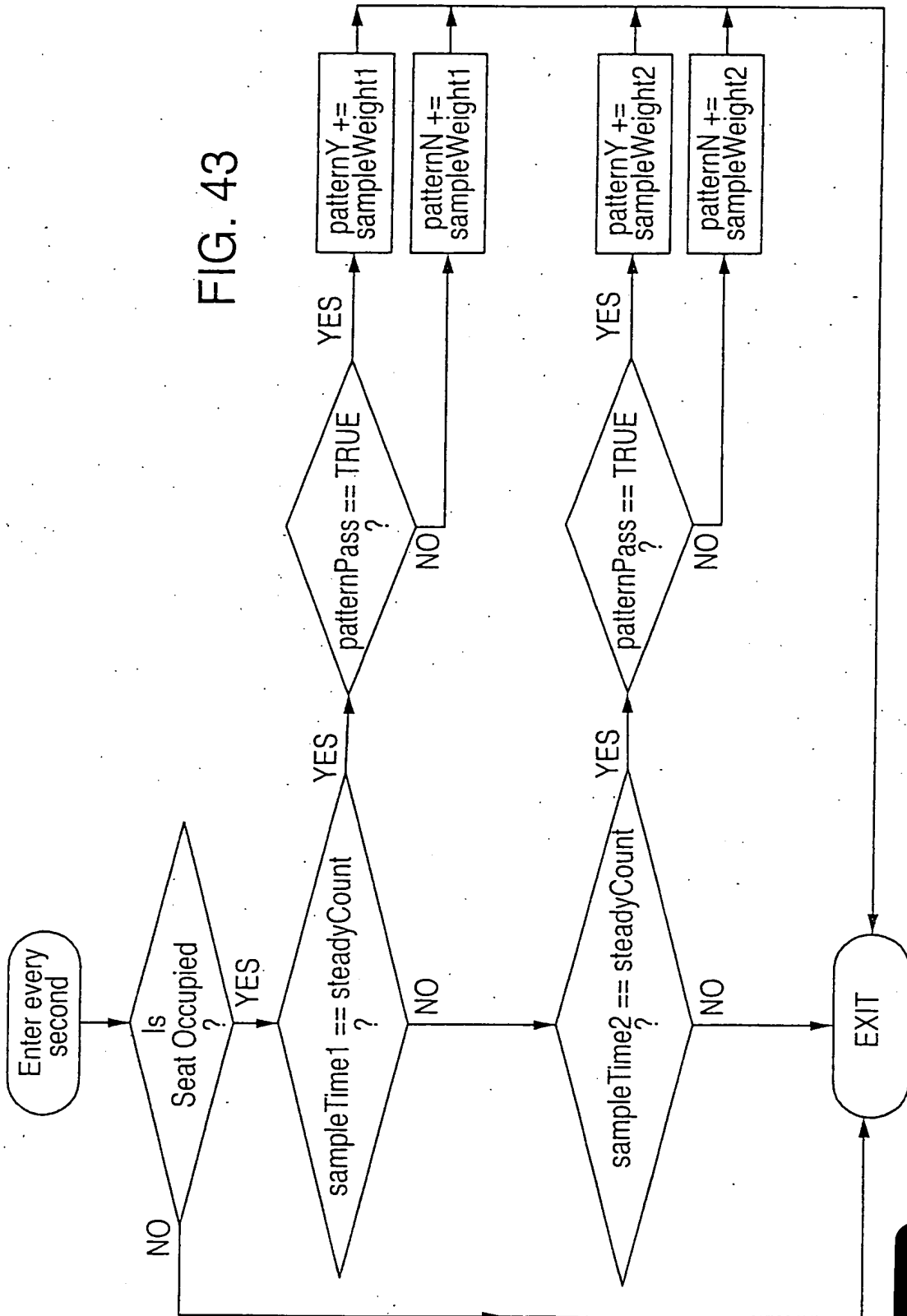


** Definitions:
ScatterCount = # of non-zero cells in Raw Grayscaled Array
CellCount = previous second's scatterCount
totalDU = current system DU value
last_totalDU = system DU from previous second



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FIG. 43



**Definitions:
steadyCount= # of seconds occupant has been steady
sampleTime= # of seconds occupant must be steady before statistical weight must be applied
sampleWeight= statistical weight to be added to running statistical total

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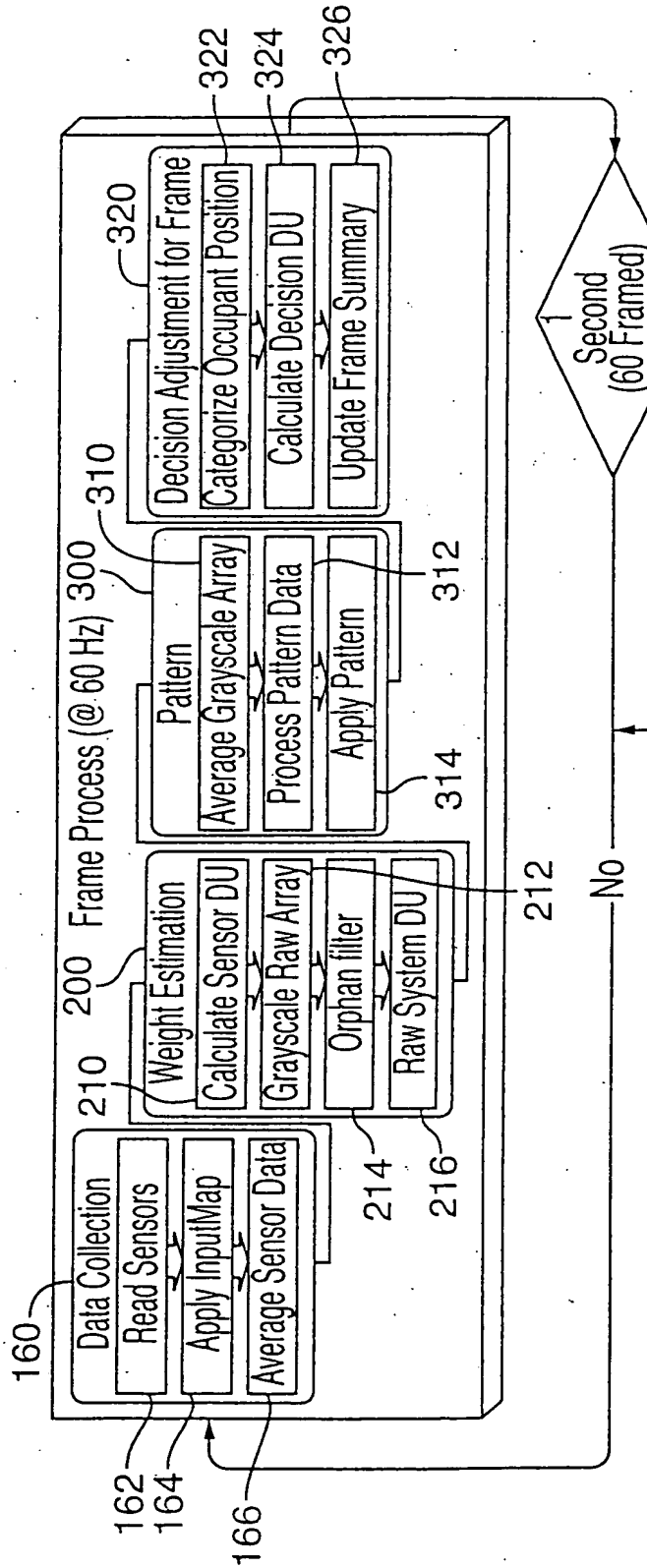


FIG. 45

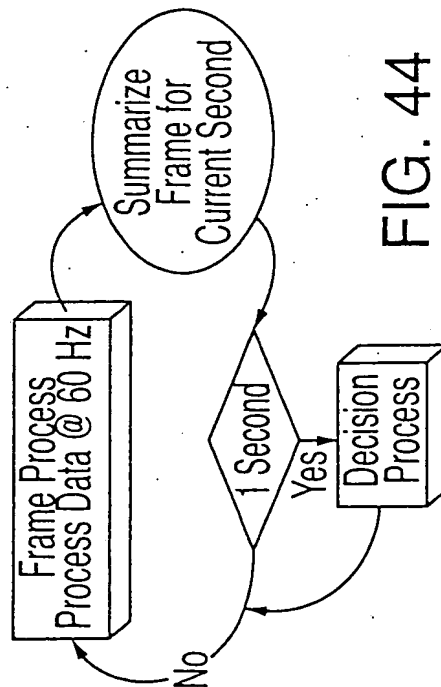
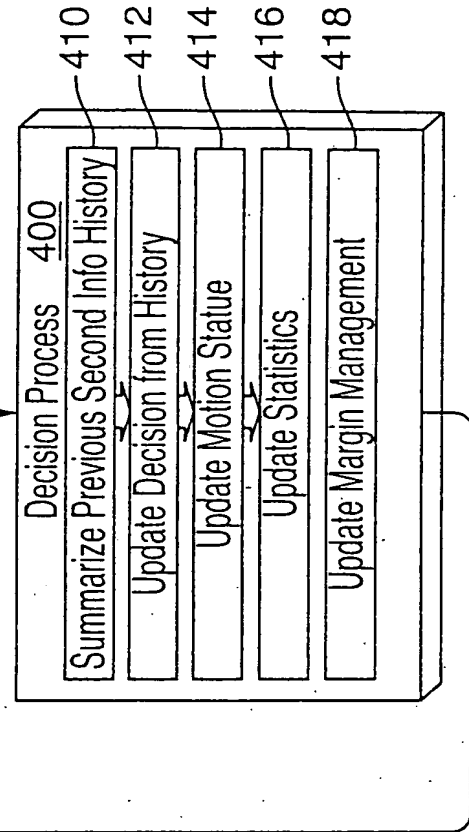
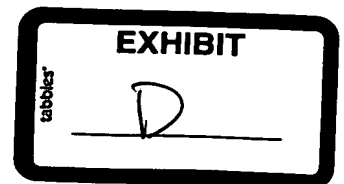


FIG. 44



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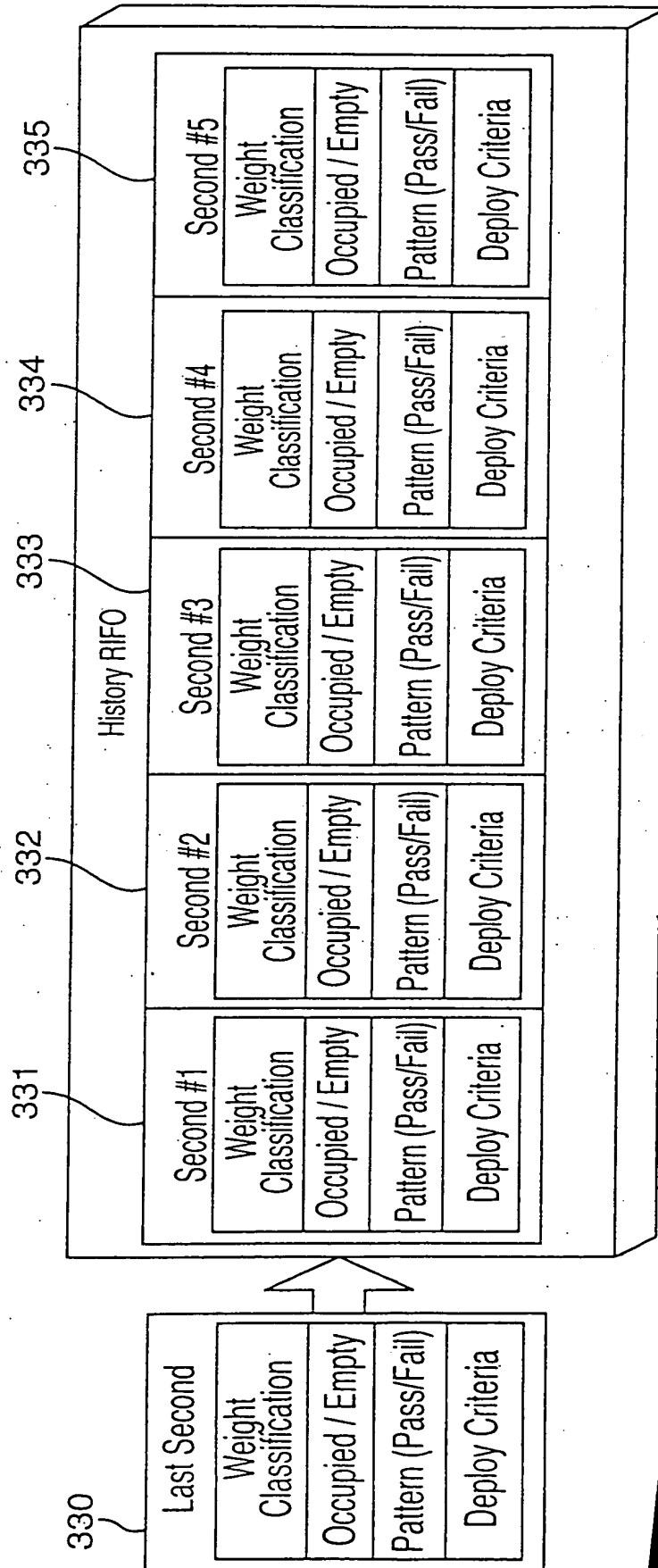




FIG. 46



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OFFICE OF THE FOLLOWING: Transmittal Letter, Specification (pages 1-64); claims (page
65); abstract (page 66); THIRTY sheets of drawings; Declaration (copy from prior application);
Power of Attorney (copy from prior application); 14 cited references listed with Information
Disclosure Statement PTO form 1449; and return postcard

In re Patent Application of:

Michael W. Wallace

Filing Date:

17507 U.S. PTO
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